



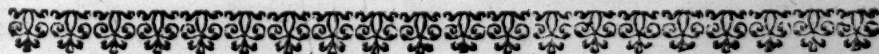
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By BENJAMIN MARTIN.

The FOURTH EDITION; with an ALPHABETICAL
INDEX of the Principal Matters.

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THE FOURTH EDITION
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P R E F A C E.

AS a work of this kind can want no apology for its publication, or any thing to be said in recommendation of the subject; so what I have to say concerning it, must be of the design, and the manner of its execution. As to the former, it will sufficiently appear by the title-page, that this work was calculated to reduce the vast tedious studies of the arts and sciences philological to moderate bounds, and within the reach of common peoples pockets. Nothing has more obstructed the progress of the sciences, than the bulkiness and price of books. Large treatises are designed to enable a man to form a critical notion of every part of the subject; but how very few gentlemen do we find who will give themselves that trouble? Most readers think they succeed very well, if they can acquire but a general idea of things; nor is it for men of business to aim at much more, be their fortunes what they will: and gentlemen of leisure and fortune, if they want genius, of consequence care not much for books at all, much less are they anxious about the size or sufficiency of them. It is evident, therefore, that a general and concise description or account of any art or science (especially the literary) is best adapted to answer the ends and views of the greatest part of readers. And I wish even epitomies themselves were not thought so tedious as they too often are by such persons who yet claim to be deemed polite, and to have a taste for the belles lettres.

As

THE PREFACE.

As to what concerns the execution of this work, I have only this to say, that from a great number of the best books on each subject, I took pains to collect the best materials for forming such an epitome of each art or science, as might give the reader a general and just idea thereof, without the trouble and expence of larger volumes. Nor are the treatises in this book rude draughts or sketches, but strictly methodical, and systems formed by technical rules, and therefore very proper for youth to form their notions by.

With regard to this fourth edition, it will be sufficient to say, that I have made no addition or alteration, but of typographic errata, or some few faults which escaped in the former impressions. As there can be none so unreasonably greedy of knowledge, as to think they have not enough in this book for their money, so it was unnecessary to add more; nor could it be done consistent with common justice to my subscribers, who enabled me to publish it at first, and took off so great a number of the impression; and therefore merited a right to all the advantages the book should ever have. I therefore send it abroad once more, as it came out of my hands, and trust its fortune to its merits, desiring no more than an acceptance of this, or any other book of mine, proportional thereunto.

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OF THEOLOGY, or the Existence of
a DEITY; and the First Principles of
NATURAL RELIGION.

MAN only, of all other beings, is able so to view and consider things which appear all around him, that by duly comparing one with another, and a just method of arguing, or reasoning from effects to their causes, he can at last easily arrive to, or make a discovery of a prime, or first cause, the great Author and Maker of all things, and which, by us, is called God.

And as the whole frame and order of things, which we behold, is what we call nature; so that act of the mind whereby we consider and compare things, according to their various natures and relations, and deduce from thence the existence of a God, is what we call reason. And the arguments and motives which are afforded us from the view and prospect of nature in her several parts, and whereby we are induced and inclined to give our assent to the doctrine of the being of a God, is what we call the light of nature.

And e'er we reckon six, eight, or ten years from our births, we are able, in some degree, to exert this noble faculty of reason, and make some progress in the divine discovery aforesaid, viz. of God's existence and moral qualities: and this faculty of reason, as we grow in years, becomes more strong and perfect, and works on the pure and untainted mind with native force, and such powerful and clear proof, as we can neither deny nor withstand. And thus, as St. Paul has observed,

B

Man only rational and able to discover the being of a God.

Nature.

Reason.

Light of nature.

Reason capable of discovering a God.

Rom. i. 19, 20.

what

Of THEOLOGY, or the

what is necessary to be known of God, (or indeed can be known of him by us) is manifest in the works of creation; even his eternal power and godhead is clearly seen, being understood by the things which are made. So that all persons, capable of reason, are without excuse, who do not readily acknowledge the being and glory of God.

The voice of
nature univer-
sal,
Psal. xix. 1,
2, 3.

and loudly
proclaims a
God.

The various
sorts of created
beings.

First class.

Second class.

Third class,
animals.

Fourth class,
mankind, the
most perfect of
all others.

Nor is there any part of nature within our view, (nor any place where there is not such a view of nature) which doth not loudly call upon us to receive and confess this great and divine truth. The heavens declare the glory of God; and the rich furniture thereof, the sun, the moon, and stars, shew themselves to be his handy-work: day unto day uttereth speech, and night unto night sheweth knowledge. There is no nation on the face of the whole earth, where their voice is not heard; for it is gone through all the earth, and their words to the end of the world.

From hence we are naturally led to survey and make a proper distinction and arrangement of the works of nature: we see all things consist of matter, which is for the most part obvious to our senses; and we are most agreeably surpris'd with a wonderful and infinite variety of forms, conditions, and qualities of natural substances. Some parts of matter we observe to be without motion, sense, or life, as stones and earth: others we see are endued with a power of growing and extending themselves into special forms and sizes, as herbs and trees, which therefore have innate motion, and may, in some sense, be said to live or have life, though in the lowest degree. The next class of beings which present themselves, is in a degree much superior to the foregoing, the subjects of which are all endued with native motion, life in the most perfect degree, and the quality of sensation; that is, they are capable of seeing, hearing, tasting, smelling, and feeling, of all those objects which come within the reach of any of these five senses. These creatures are therefore called animals, because they have the faculty of life, or are endowed with a living soul. And of all animals, man is the head and ruler, on account of the far more perfect and excellent faculties and powers of his mind, and especially that of reason, by which he is distinguished from, and set above and over all the other creation, as king and lord of all; and from hence he is called a rational animal; not but that reason, in various in-

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Existence of a Deity.

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erior degrees, may be very justly allowed to other animals, who, on divers occasions, give very convincing proofs thereof.

But man alone is capable of using his reason to the noblest purposes, to wit, the finding out the being and perfections of God, his providence, and the certainty of a future state after death. For he can thus reason or argue: every thing that is, or doth exist, receives its being either from itself, or some other principle or cause; but nothing can be the cause of itself, for that implies, that while it is not, it is capable of acting, or producing its own being, which is evidently absurd; therefore it must receive its being from without itself, or from some other cause different from itself; and this first cause we name God. And this reasoning holds good of all the various kinds of beings yet observed, and even of man himself, the chief of all: for nothing is more certain, than that the power of giving or retaining life, either in himself, or any other creature, is not in man, and consequently in no other being but God himself.

But more particularly, the being of a God is evident from the bare consideration of the properties of matter: for matter, it is plain, is of itself not capable of motion or rest, but is entirely listless and indifferent to both. But since all the animal creation is endowed with the power to move or rest at pleasure, 'tis evident this faculty is not from matter itself, of which alone all things consist; therefore it must be from some other principle or cause, viz. from God.

Again; if that motion and rest in animals, which is at their will, be not of themselves, much less can that motion which is performed in animals, without their will, (I may say also without their knowledge) be first from themselves; as the motion of the heart, lungs, blood, and other fluids of the body, which all move, during the period of animal life, from one incessant cause; which, since it is not subject to the will and power of the animal, must necessarily be from the general and the first cause of all things, God.

This is most certainly evident from the absolute and constant motions of the heavenly bodies, which ever keep turning round one common center in orbits nearly circular. For since these bodies, I mean the planets, are only huge masses of mere matter, they are not of

The principal argument proving the being of a God.

The second argument proving a God from voluntary animal motion.

The third argument, from involuntary motion of animals and other things.

From the motions of the heavenly bodies, absolutely considered,

themselves capable of any motion at all ; therefore they were first set in motion by some first mover, which is able to communicate that power to matter ; which is God only, as before proved.

Also from their constant circular motions.

But this is still more obvious from the manner of their motions, which is circular ; for when matter is put into motion, it naturally proceeds in a direct or right course ; that is, straight forwards, and not in a crooked or circular course or orb, as the planets all do. Now the air is not of that thickness or density in those regions, as to stop the rapid course of such great bodies, and turn them from a direct to a curve or circular motion ; but since it cannot proceed from the air, it must be the result of some cause in those bodies themselves, and that is gravity, whereby they tend to their common center of motion from a right course, yet so adjusted, with respect to the force of the first or direct motion, that together they form the circular course ; and so neither fly off in right lines to infinite distances, nor fall at once to the center, and there lose all motion. Now all this most admirable power and contrivance plainly points to that great Author, of whom the " heavens are the works of his fingers, and " the moon and stars are of his ordaining."

Psal. viii. 3.

Arguments to prove a God, taken from final causes.

From the consideration of final causes flow a thousand arguments to prove the existence of God. By final causes, I mean the ends for which things are evidently made, or intended to answer. Thus when we consider the light was created to render things visible, the eye made on purpose to behold them ; when we consider the air as a means to convey sounds and scents, and the ear and the nose made and contrived on purpose to hear and smell the same : that in the body there are nerves which convey the ideas received by those outward organs of sense to the brain, which is the seat of the mind in animals, to be there made use of for the service, and at the discretion of the creature, in the several occasions of life : I say, when we consider such a wonderful furniture of means appointed so evidently to answer such a series of proper and necessary ends, it forces our assent to the doctrine of a Deity, who alone can be supposed capable of performing such wonderful things.

From a general survey of

Again ; from a due and nice examination of all the larger parts of the creation, such as the globe

of earth on which we live, the great variety of its produce in animals, plants, and minerals; the exact contrivance of animal bodies to suit them for the medium in which they live; the man, and larger beasts for land, the fishes for swimming in water, the fowls for flying in air, the infinite species of creatures for the dark abodes within the body of the earth; the rich and beautiful variety of herbs for the pasturage of the beasts, and service of man; with all the mineral tribes in the bowels of the earth; the great and useful variety of mountains, vallies, rivers, springs, &c. with which its surface is diversified: as they all jointly serve the uses and necessities of mankind, so they call most emphatically upon us to acknowledge and adore the divine Author, for displaying and expending so much of his boundless power and providence in our behalf. In like manner, the wondrous orb of air surrounding the earth, serving to the generation of winds, rain, lustre of day-light, &c. absolutely necessary to the state of man and beasts: also the whole frame and structure of the heavens; the sun which rules by day, and the moon which rules the night, with the stars also, will unavoidably induce us to confess, that 'tis "God who hath laid the foundation of the earth, and that the heavens are the work of his hands."

Another, and not the least argument for the being of a God, is taken from the manifest consent of all nations with whom reason and morality hath appeared in any degree, and whose barbarity hath not brought them to a level with mere brutes. For whereas that which results from the will, humour, or mere opinion of men, is never the same among all people, as this notion of God's existence is; that is always mutable; this always and every where the same; all the world contend about matters of opinion, but all jointly agree to, and endeavour to establish this point. With respect to articles of faith amongst Jews, Mahometans, and Pagans, as well as amongst Christians, scarce any one hath remained uncontested but this; this stands first and the same in all the creeds of all nations: and it hath been often seen, that though a very great body of people may maintain an erroneous doctrine, yet it never fails of being sooner or later detected, and confuted to the satisfaction of all parties; a fate which this sacred doctrine only hath never yet been subject to. Much more

the earth and
the heaven.

The universal
consent of all
nations, an
argument of
God's exist-
ence.

This universal consent, whence.

Acts xvij. 24, 25, 26, &c.

Atheists, an objection of no force against the doctrine of God's existence.

The atheist is a fool.

may be said on this head, but let this suffice here. Now from whence should this universal persuasion concerning a Deity proceed? May we not answer, from the cogent sacred oracles of nature? Is not every part of nature vocal on this occasion? And doth not the most contemptible animal thunder in our ears the tremendous name of its Maker? It is impossible then, but that all should know, and universally confess, that it is "God" "who hath made the heavens and the earth, and all" "things therein; that he hath given to all life, breath," "and all things; and that he hath made of one blood" "all nations of men to dwell on the face of the earth; and" "therefore that in him we live, move, and have our being."

It is an objection of no force, to say there have been several particular persons who have denied this sacred truth, the being of a God: for (1.) it may be answered, that these persons, take them all together in all ages, have been exceeding few; and their impious opinion therefore ought not to be thought of any weight against the avowed judgment and consent of all nations. (2.) It is possible this was not really the sentiment of their minds, and language of their conscience, though they might, for several reasons, dare in words to profess they believed no God; nothing being more common, in other affairs of religion, than for some men to profess what they do not really and seriously believe in their minds. (3.) Several who have been once so unhappy as to fall into this dreadful supposition, have afterwards, upon conviction, renounced it with abhorrence, and wondered at their stupidity. (4.) There are some people who make no scruple of denying the evidence of all the senses of the body, when they contradict their declared tenets, and these by whole nations together; no wonder then that here and there one single person should refuse to hearken to the internal senses of the mind: for all nations believe that bread is not flesh; that animals have sense of pain and pleasure; that some things are certain and true; as well as that they all believe a God; and yet they have all been denied, as well as this. (5.) If any have been really of this opinion, they must necessarily have been devoid of reason; for right reason dictates the contrary: so that it is a just remark of the Psalmist, that it is the "fool who hath" "said in his heart, there is no God." The atheist then is a fool; not so much for want of natural sense,

as natural reason : he is so in the same manner as are state criminals, viz. he is a malecontent, a traitor, a rebel against his sovereign Prince and Maker.

From the foregoing arguments, and many others, 'tis evidently proved there is a God ; and not only that, but we may from thence, and by the same method of reasoning, plainly discover and infer most of his attributes and perfections, which render him, to us his creatures, an awful and adorable object. As first, that God is a necessary self-existent and eternal being ; that he is an unchangeable and independent being ; that he is but one ; that he is a being most simple, uniform, indivisible, and incorruptible ; that he is omnipotent, or all-powerful ; omniscient, or infinite in knowledge ; that he is a pure spirit, without body, parts, or passions ; that he acts freely, as he pleases, without necessity ; and lastly, that he must necessarily be a being of infinite goodness, mercy, justice, and truth, and all other moral perfections ; such as become the supreme ruler and judge of the world.

The providence of God is most rationally inferred from his being proved the Author or Maker of the world, and all things therein. For not only man, as being endowed with understanding and wisdom, but even birds, beasts, insects, and all creatures having life and sense, we constantly observe to have a special care, regard, and tenderness of their offsprings ; and as it is a part of natural goodness, can we, on any account, suppose the same carefulness and providential regard to the works of his hands, wanting in that great Being whom we grant to be possessed of infinite goodness, mercy, and benevolence ? But this is directly proved from several observations on the works of nature, as the motions of the heavenly bodies, contrary to the proper laws of nature, &c. to answer a general end. Wherefore we must conclude, that the same God who created all things, and upholds and preserves them by his continual concurrence, does also, by his all-wise providence, constantly govern and direct the issues and events of things, takes care of this lower world, and of all, even the smallest things therein ; disposes things in a regular order and succession in every age from the beginning of the world to its final period ; but inspects, with a more particular regard, the moral actions of men.

The absolute and moral perfections and attributes of God discoverable by the light of nature.

The providence of God, or his government of the world, and all things therein, plainly inferred from the light of nature.

A future state of rewards and punishments proved. First, from man's being an accountable creature; and the nature of virtue and vice.

Secondly, from man's natural desire of immortality

Thirdly, from the dignity of man's nature.

Fourthly, from conscience.

Fifthly, from the consent of nations.

Piety the immediate consequence of our belief of God, his providence, and a future state.

A future state of rewards and punishments may be concluded also by the strength and light of reason. For, (1.) The nature of man is such, that he acts freely, of choice, and unconstrained; and hath a law imprinted in his mind, which constantly directs him to do that, in every case, which is fit and requisite from the nature of things. If he acts agreeable to this law of right reason, it is reputed virtue; if contrary to it, it is called vice: but virtue merits reward, and vice punishment, from the nature thereof: yet these rewards and punishments, 'tis plain, are not equally distributed in this life; and since they are from God, to whom alone man can be accountable for his moral actions, and he is infinitely just, it follows there must be another and future state, in which virtue and vice must receive a perfect and equitable distribution of rewards and punishments, proportionable to the several degrees of merit and demerit. (2.) From the natural inclination and desire of immortality, and an unavoidable concern for what is to come hereafter, implanted in all men, we may very probably conclude a future state. (3.) The dignity and excellency of man's nature plainly shew him designed and intended for a better and more worthy state of life, than the best he can enjoy in this world. (4.) The natural self-consciousness and judgment which all men secretly make of their own actions in their own minds, is by all allowed to be no small proof of a future state of account. (5.) It hath been the confessed judgment and opinion of almost all the Heathen world, and has obtained as universally, both as to time and place, nearly as the notion of a God itself; and therefore must be the result of reason, and deemed a certainty.

Having established in the mind a firm and rational belief of a Deity, his providence and government of the world, and a future state of life, there must necessarily ensue the practice of piety, or an effectual sense of the obligations we are under to love, fear, serve, praise, pray to, and adore the sacred name, and glorious majesty of God. From hence also we are induced to trust in, to rely and depend upon him; to exercise patience and hope in times of affliction and adversity, and to keep ourselves humble in times even of the greatest prosperity and felicity; to have always a due and solemn regard to the rectitude of all our actions; and

to

Of ETHICS, &c.

9

to be always in a proper degree of resignation, both of ourselves and fortunes, to the sovereign dispose and pleasure of God, who, though he be the Most High, and has dominion over all, yet he is righteous in all his ways, and his tender mercies are over all his works.

Of ETHICS, or MORAL VIRTUES.

ETHICS is that science, or practical discipline, which teacheth and explains the way and means of attaining human felicity, or the greatest happiness our natures are capable of in this life. This science is also called morality, or moral philosophy. Definition of ethics.

It is called morality, because it directs the manners of men aright, and determines them to the ways of virtue, and from the deceitful and dangerous paths of vice. Why called morality.

Since the chiefest happiness of life consists in the tranquillity and pleasure of the mind, and this can proceed from nothing but the consciousness of a series or life of actions performed according to the rule of reason, virtue, and honesty; it follows, that in order to have a just notion of this most useful science, and treat of it in a proper manner, we must first consider the nature of human action, and the law by which it is regulated. The object of, and prerequisites to this science.

Human action, or agency, is that which ariseth from the proper and distinguishing principles of man, viz. the will and understanding. It must flow from the will, that it may be free; and from the understanding, that it may be rational; and being thus both free and rational, it must be human. Human actions what, and how so.

Moral action is such as renders the agent or doer good or bad, or worthy of reward or punishment. Moral action what.

That an action be good or bad, it is required there be a certain agreement or disagreement of the act and object to which it is referred; that so reason may determine whether the action, with regard to the object, may be aptly, meetly, and prudently exerted, or not. And if there be any action wherein no such regard can be How an action becomes good or bad.

be had to the object, that action is said to be indifferent. An action also may become good or bad, from the end or design thereof, and several other circumstances attending it, as time, place, person, order, age, condition, cause, &c.

Actions either wholly good, or wholly evil, except indifferent ones.

In order to denominate an action good, it is requisite that the object, end, and circumstances, are together all good, at least none of them bad. Hence it follows, that no action can be partly good, and partly bad; and that if either the object, end, or circumstances, be singly bad, the action will be evil, and that wholly so. Lastly, it follows that there is no participation of good and evil; and that evil is only the privation of good, or want of due conformity between the act and its object.

The same exemplified.

For example, in doing alms, the object is a poor necessitous person; the end is to abate or prevent misery arising from want of necessaries; the circumstances are the person's merit, quality, the time, place, number, &c. Now if from all these things duly considered, reason approves our giving an alms, the action is good, and then becomes our duty: but if the object be not poor, and need it, or our end be the praise of men; or, lastly, if he be an idle, worthless, or undeserving person; if a vagrant, to whom the laws have forbid the act; or the number of objects so great, that in relieving them you must reduce yourself and family: I say, in any one of those cases, even so laudable an act as almsgiving, would, in the judgment of reason, be censured as an evil or folly that ought not to be done.

The rule of human actions is twofold; viz. (1) law; (2) conscience.

The rule of human actions or manners, is a measure by which we make a judgment of things of the same kind, from their convenience therewith, or disagreement thereto. This is twofold, (1.) external, which is called the law; and, (2.) internal, which we call the practical judgment of the intellectual mind, or conscience.

Conscience defined.

Conscience is the internal judgment or testimony of man's own mind, which he makes or passes upon actions done or to be done, concerning their good or evil quality, and of his own state consequent thereupon. This testimony of conscience arises from the memory of facts committed or omitted; but the judgment of conscience proceeds from an application of the law or rule to the facts done, or to be done.

Conscience,

Conscience, in bearing testimony and passing judgment; proceeds in a kind of syllogistical method of reasoning, by propositions and consequences. For example: if any man love the world, the love of the Father is not in him; but I love the world, therefore the love of the Father is not in me. He who does any thing forbid by the law, sinneth; but I have done somewhat forbidden by the law, therefore I have sinned. In these syllogisms the first proposition contains the rule which conscience respecteth in bearing judgment, and is called the light of conscience. The second contains the testimony of conscience, in regard of which it produceth itself a witness. The inference is the judgment of conscience.

Conscience acts syllogistically. Examples.

The light, testimony, and judgment of conscience.

The rule by which conscience judgeth of the action, and censureth the person, is the will of God, known either by the light of nature, or from divine revelation. The will of God is plainly discoverable by the light of nature, as hath been shewn under the foregoing title. This also is asserted by St. Paul, Rom. ii, ver. 14, 15. From whence it is plain, the whole tenor of the moral law was imprinted on their minds, and engraven in their hearts; but, by divine revelation, the dim light of reason receives a great addition of lustre and brightness; and the benefit of this divine revelation we Christians only enjoy from the sacred scriptures; for therein, in a more clear and evident manner, is the righteousness of God (or his will, or law of moral rectitude) revealed from one article of faith to another.

The rule of conscience the will of God.

Rom. i. 17.

Conscience, in regard to the knowledge of this rule of moral action, is said to be firm, well informed, and instructed; or weak, scrupulous, dubious, and erroneous. An erring conscience is that which with a firm assent judgeth otherwise than the thing is. This error of conscience ariseth either from a want of a clear and full conception of its rule, or conclusions not well or rightly deduced from it; the cause of which is a depraved disposition, which either leads the mind off from a due enquiry, or perverts it from judging rightly. A weak and scrupulous conscience proceeds from the rule's not being in every part so express, extensive, and certain, as to remove all doubts and scruples in lesser matters and circumstances, and thereby to render it able to determine what is fit to be, or not to be done.

The several qualities of conscience, as firm, weak, dubious, and erroneous.

He

Actions against conscience, tho' erroneous, are sinful, and why.

He that acteth against his conscience, tho' erroneous, sinneth. For, (1.) He virtually acteth against the will of God, or what he is firmly persuaded is such, which is all one; for whatever conscience dictates to be done, it pronounceth it to be done for this reason, because the will of God requires it. (2.) Because he acts counter to that reason, which is the nearest and most immediate rule of acting. (3.) Because the will acting contrary to the dictates of an erroneous conscience, is equally culpable as when it is not erroneous: since 'tis the same thing, with respect to the will, to be and to appear; and that we should be moved with an apparent, equally as with a real good.

Weak consciences ought to be indulged with liberty and freedom.

Since then the dictates of conscience, even though erroneous, are such sacred and indispensable ties, 'tis evident that weak, scrupulous, and dubious consciences ought to be indulged with the greatest liberty and freedom; for force, constraint, and violence, offered to the conscience exercised with doubts and scruples, is a very bold attempt, and highly affronting to God; since in this case, whilst the conscience is uncertain whether the act be pleasing to God, or agreeable to the rule of reason, it is immediately driven upon it by coercive power at all adventures; and so cannot fail of producing much disquietude and uneasiness in such weak minds, and thereby renders them miserable; contrary to the institution of moral government, which is to make men happy.

A good conscience defined.

Conscience, as it respects our conformity or contrariety to the laws of known truth, is said to be good or evil. A good conscience is that which sincerely judgeth that to be good or evil, which is such in the judgment of God; and that, by virtue of such a judgment, efficaciously excites us to the performance of good actions, and to abstinence from evil ones. The means of preserving a good conscience, are, (1.) Frequent reading and meditating in the word of God. (2.) A frequent and impartial examination of our own ways and actions. And, (3.) The having always a reverential fear of the all-wise and heart-searching God before our eyes, and in our hearts. The effects of a good conscience every good man knows.

An evil conscience defined.

An evil conscience is that which doth not hold or avouch that truth which it may and ought to know and acknowledge; or else which acteth contrary to a known truth.

truth. The first is said to be a blind conscience, as it accuses, when it should or ought to excuse; and the contrary. The latter is a downright wicked conscience, inasmuch as it acts in a sort of defiance to God, or in direct contradiction to his will. How dangerous then is the case of those, whose interests prevail with them to reject known truths, or act contrary to them!

Blind conscience.

A wicked conscience.

The second part of the rule of human actions is a law; this is the external part. A law is a precept of a supreme legitimate power, sufficiently promulged, concerning some legal matter, and obliging the subject, under penalty, to the doing or not doing thereof. Under the name of a precept, the prohibition of a thing is included, which is a precept of not doing a thing.

A law defin'd.

Law is either divine or human: a divine law is the mandate of God's own majesty; which we are not only obliged to obey, but to esteem perfectly good; as derived from a principle infinitely good and righteous. The divine law only has the prerogative of binding the conscience directly and immediately; because God alone can know the internal motions of the mind, and he only is able to punish the sinning conscience.

A divine law, what.

An human law is that of man, who receives the power of giving laws from God: this law is mutable and prudential, and therefore subject to repeal and amendment. An human law only binds the conscience in a mediate manner, and in subservience to the divine law. The body only is the proper subject of human law, as the conscience is of the divine law.

An human law, what.

A divine law is either positive or natural. The positive law is so called because its obligation ariseth only from the will or precept of the commander. And that is said to be a natural law, whose obligation ariseth from the nature of the thing enjoined. Therefore, things of the natural law are prohibited, because they are evil; but those of the positive law are evil only because prohibited. The natural law is what of late is generally called the moral fitness of things.

The divine law twofold, viz. positive, and natural.

VIRTUE is an habit of mind, elective and acquired, by which we are rendered apt, and constantly inclined to prosecute or avoid, to act or not to act, as reason and prudence direct or require.

Virtue defin'd.

VICE is an habit of mind, acquired, and by which we are rendered negligent of the dictates of right reason and

Vice defin'd.

How differs from sin. and prudence in the course of our actions. Vice differs from sin in this, that the former is an evil habit, the latter an evil act. Sin, or moral evil, is of a negative nature, being the want or privation of that rectitude which ought to be in every rational creature, which renders him conformable to the rule or law of action.

Sin, or moral evil, defined. VIRTUE, by some, is said to consist of the six following great parts, viz. prudence, sincerity, fortitude, temperance, justice, and charity. And under these general heads, which are called cardinal virtues, (as the great hinges on which all morality turns) are contained all the lesser branches and subdivisions of moral duties or virtues.

I. Prudence, wherein it consists.

The offices of prudence.

II. Sincerity defined.

III. Fortitude defined.

I. PRUDENCE is an habit, by which a person rightly judgeth both for himself and others, concerning those things which are the subjects of action, in regard both of temporal and eternal welfare; and so orders and governs the actions of life, that discerning the good from the evil, and the useful from the hurtful, he can direct persons what to follow, and what to fly, and instruct them how to live well and happily. Or, more briefly, it is the knowledge of those things which are proper to be desired or avoided. The offices then of prudence are, (1.) To judge and discern between things fit and not fit to be done on all occasions. (2.) To counsel and advise others who stand in need thereof. (3.) To prescribe the means for a safe and happy conduct of life.

II. SINCERITY is that virtue of the mind, by which the will is simply and wholly determined to that which the mind judgeth to be absolutely best, and merely and alone for that reason, viz. because it is best. It determines the will simply, without hypocrisy, or mixture of external regards; as, to gain, fame, &c. And wholly, inasmuch as it prosecutes, without exception, all things which by the mind are adjudged best and most fitting. Since then it is in itself a thing really and simply the best, that we follow and obey God in all things, 'tis necessary that this virtue of sincerity should move and excite us thereto; and that merely because he is a proper object, and it is our reasonable and most advantageous duty so to do. Hypocrisy is the vice opposite to this virtue.

III. FORTITUDE is a firm and steady purpose and resolution of mind, to undertake good and necessary

fary works and actions, and a constant perseverance in prosecuting the same, maugre all the dangers and difficulties that may arise and attend it. Fortitude therefore consists in these two principal acts, viz. to undertake, and to sustain. The first is resolution, the second constancy and patience. The first proceeds from a natural magnanimity, or greatness of mind; the latter from a noble bravery, courage, and strength of the mind, rather than of the body. Magnanimity, equanimity, and patience, are always the inseparable concomitants of true fortitude. The first secures us against the loss of honour; the second against adverse fortune; the last enables us to bear the pains of the body, and indispositions of mind.

Resolution.
Constancy.
Patience.
Magnanimity.
Equanimity.

IV. TEMPERANCE is that virtue which sets proper bounds and limits to our natural appetites and desires, in things which respect the present life. The virtue of temperance is very extensive, and comprehends the following, viz.

IV. Temperance defined.

HONOUR, which is an acknowledgment and proper testification of that dignity, worth, and excellency we observe or understand to be in another. Temperance here forbids flattery, which is the giving a greater measure of honour and merit than is due to a person.

Honour.

MODESTY is that noble virtue which tempers our desire of honour; and though it produces in us a moderate conception of our own merits and worth, yet it generously permits to receive and acknowledge so much honour and esteem as we reasonably deserve. The same holds good with respect to the natural concupiscence of the body. The opposite vices hereto are pride and ambition.

Flattery.

Modesty.

SOBRIETY is that excellent virtue which tempers and restrains our natural appetites, chiefly of meat and drink, to what is sufficient and necessary; and thereby prevents in us those two vicious and dishonourable excesses, gluttony and drunkenness, too well known to need defining.

Sobriety.

Gluttony and Drunkenness.

CHASTITY is that most amiable and engaging virtue, which instructs and disposes the mind to a pure life, undefiled, and free from all impure affections, in word, gesture, or action. But in common, chastity is taken in a more restrained sense, and signifies that virtue, whereby we abstain from all lustful impurities of that kind we call venereal; and avoid all the motives thereto,

Chastity defined.

thereto, in thought and deed. To this virtue are opposed the following vices, viz. (1.) Adultery, the unlawful coveting or cohabiting with another man's wife. (2.) Fornication, the illegal and carnal cohabiting of a man and woman, both unmarried. (3.) Concubinage, which is a man's keeping an unmarried woman at his house, and cohabiting with her constantly as a wife. (4.) Polygamy, or plurality of wives or husbands, with one man or woman at one time. (5.) Incest, which is either adultery, fornication, or marriage within the prohibited degrees of kindred. (6.) Rape, or ravishment. All which are heinous and abominable crimes in the sight of God.

Opposite vices.
Adultery.
Fornication.
Concubinage.

Polygamy.
Incest.

Rape.

V. Justice
defined.

V. JUSTICE is that moral virtue whereby we are inclined to perform every thing that is due to our neighbour, so far as right and equity require. Justice is concerned to preserve the innocent from harm and injury; to punish offenders according to their demerit, and to reward the virtuous and deserving with what is their proper right and due. The proper offices of justice then are, (1.) To hurt no man in his person, character, fortune, or in any other wise whatever.

The offices of
justice.

Justice two-
fold, viz. 1.
Commutative,
what.

(2.) To render to every one his just due, both in words and deeds. Justice is of two kinds; (1.) Commutative; and (2.) distributive. Commutative justice consists in the equality of the thing received and returned; and is the virtue which renders to every one his own, in external goods; and is principally occupied in buying and selling, which is a commutation of things of equal value; and the common and standard measure of such kind of commerce between men, is what we call money.

Money, what.

Injustice,
what.

The vice opposite to this we call injustice; which consisteth in having more or less in the permutation of goods, than the aforesaid equality requires.

2. Distribu-
tive, what.

Distributive justice is that which consists in distributing rewards and punishments, according as every one hath deserved; honours, dignity, benefits, and commodities of all kinds, to whom they are due: as also tributes, taxes, censures, and all kinds of burthens and penalties, where they are necessary and deserved. The first is called remunerative justice; and the latter corrective or vindictive justice. Corruption or bribery, which is the taking of gifts to prevent or pervert the due dispensations of justice, are the opposite vices hereto.

Corruption
and bribery.

VERACITY

VERACITY is that virtue whereby we are inclined to express truth, by words or signs equivalent thereto, on all occasions. Truth is the agreement of words and expressions, either (1.) With the thing itself; or (2.) With our understanding and judgment. Falsity is the opposite of the first of these, as a lye is to the latter. Simulation is our seeming to express the truth by facts and signs, which yet in reality do not express it. Fallacity is the vice by which we deceive another, and impose on him a falsity under the pretence or guise of truth.

Veracity defined.
Truth, what.
Falsity and a lye, what.
Simulation.
Fallacity.

FIDELITY is the concord or agreement of facts with promises and covenants, expressed or understood. Faith is the belief or persuasion we have of this fidelity in another person, who is under a promise to, or contract with us; and the act whereby we trust to the fidelity of a person in such a case, is called confidence. Note, This virtue of fidelity is also called (simply) faith and faithfulness. The opposite vices hereto are, (1.) Infidelity and unfaithfulness, when there is no intention of performing what is promised. (2.) Perfidy or insincerity, when we do not sufficiently, or as much as in us lies, endeavour to perform our promises and contracts.

Fidelity defined.
Faith, what.
Confidence.
Infidelity.
Perfidy.

EQUITY is a due correction or moderation of the rigorous exaction of right contained in the law. For since laws are general things, and do not reach the particular state, cases, and circumstances of a matter under all the changes and vicissitudes it is obnoxious to, 'tis necessary they should be duly tempered by the mild and reasonable rules of equity; which always direct us to do to others, as we would they should do to us. The vice opposite hereto is called iniquity.

Equity defined.
Iniquity.

VI. CHARITY is that benign and kind disposition and affection towards our neighbour, arising from the structure and temper of our nature, whereby we are inclined to procure all the good we can to him, and to indemnify him from all the evil we are able. This noble and generous quality in us, the Latin sages thought to express or comprehend the whole nature of man nearly, and therefore termed it humanity. And the Greeks, with a peculiar propriety, called it philanthropy, or the love of mankind. This most extensive virtue comprehends divers particular ones of very great consequence and note, as follow.

Charity defined.
The same with humanity and philanthropy.

C

BENE-

- Benevolence defined.** BENEVOLENCE is that part of charity, or love to our neighbour, whereby we are inclined to wish his good from our hearts, and to rejoice in his obtaining it; which latter part is called congratulation. To this branch of charity is opposed, (1.) Envy, which is an uneasiness of the mind at another's welfare and happiness. (2.) Malevolence, or a wishing ill to our neighbour. (3.) Hatred, or that affection which is prone to the evil of our neighbour, or whereby we abhor him. (4.) Enmity, which is an inveterate hatred against our brother, seeking an occasion to hurt or do him harm.
- Affability defined.** AFFABILITY is a virtue whereby we benignly receive, and freely converse with those who make their address to us.
- Comity defined.** COMITY is a virtue which renders us easy of access, and makes us shew ourselves sweet, courteous, and pleasant in all our actions to those we converse, or hold any commerce withal. By this virtue we express a pleasure and delight in conferring offices of kindness on our brethren, and conciliate their love and affection to us thereby. The vice opposite to comity is morosity, which consists in a churlish, dogged, surly, and contemptuous affection of mind towards our fellow creatures.
- Mercy defin'd.** MERCY is that affection of charity, which creates in us pain at the miseries of others, and whereby we are inclined to succour and relieve them. It ariseth from sympathy, or a fellow-feeling of each other's evils, naturally implanted in our frame. Mercy is exercised chiefly in forgiveness; remitting the rigour of our claims and dues, where they cannot easily be had; and in remitting or moderating the severity of penalties and punishments; which latter is called clemency. The contrary vice to this merciful disposition, is called cruelty; a quality therefore which one would think human nature not capable of.
- Beneficence.** BENEFICENCE is that office of charity, which moves us to procure and advance our neighbour's welfare, by doing him all the good in our power; let him be in prosperity or adversity, our friend or foe. And to this heavenly virtue is opposed maleficence, or the devilish spirit of doing ill to, or persecuting of our brethren, who are our own flesh and blood.
- Maleficence.**
- Manfuetude.** MANSUETUDE is that virtue (near a-kin to clemency) which teaches us prudently to moderate anger, and ariseth from a merciful mind. Continued manfuetude

tude is called longanimity, a virtue which long restrains anger; and though we are often offended, it takes from our minds the desire of revenge. To these exalted virtues is opposed an irrational barbarity, which renders us capable (strange to say!) of inflicting cruelties and miseries, or seeing it done without remorse. Longanimity. Barbarity.

LIBERALITY is that office of charity, by which, from the impressions of humanity towards our poor and needy neighbours, we are moved with a free and light heart to supply them with necessaries according to the measure of our abilities. Therefore this excellent virtue is most of all conspicuous in giving of alms. And this eleemosynary disposition is so pleasing to God, that he has assured us, that he who giveth to the poor, lendeth to himself; and that he will abundantly repay him. When the subjects are strangers or foreigners, then this virtue is called hospitality. The opposite vice hereto (could a reasonable man think there was any?) is a stingy parsimony, or close-fistedness, too often seen among the soul-less ungenerous wealthy, who had rather their money contract a rust, than yield any kind influence to the needy. Liberality defined. Prov. xix. 17. Hospitality.

FRIENDSHIP is that more intense and refined degree of charity, which we call amity, and is the mutual return of love to those who love us; or it is the reciprocal benevolence and mutual affection, with which we delightfully embrace and endear ourselves to one another. The ties of friendship are very great and solemn, and not to be dissolved but by an incorrigible degeneracy to vice and wickedness in our unhappy friend. Friendship or amity defin'd. When friendship only may be dissolved.



Of the CHRISTIAN RELIGION.

Theology, or
divinity de-
fined.

THAT science which treats of the being, nature, and attributes of God, and teaches the divers articles of faith concerning him, together with the true practical method of worshipping and serving of him, is called by the Greeks, theology; and by the Latins, divinity.

Christianity.
Judaism.
Mahometanism.
Paganism.

This, with the Christians, is called christianity; with the Jews, it is called Judaism; with the followers of Mahomet, it is termed Mahometanism; and the same among the Heathens, we call Paganism. These are the four great systems of divinity now in the world, and include all others. Each of which is also called by the general name of religion.

Religion de-
fined.

RELIGION is that general habit of reverence towards the Divine Being, whereby we are sensible of our obligations to him, and are both enabled and inclined to worship and serve him, after that manner we conceive to be most agreeable to his will; that so we may procure his favour and blessing, and avoid his anger and displeasure. Religion is twofold, viz. natural and revealed.

Is twofold,
viz.
Natural reli-
gion defined.

NATURAL RELIGION is that which men may know, and be obliged to, by the light of nature and common principles of right reason, improved by consideration and experience, without the assistance of divine revelation. The substance of natural religion is delivered under the two foregoing titles.

Revealed reli-
gion defined.

REVEALED RELIGION is what God has obliged us to perform by the manifestation of his will, upon the consideration of temporal or future rewards and punishments. The two great parts of which are faith and practice.

Revelation.

The manner in which God reveals his mind, is generally by vision or inspiration; whatever God thus shews to men, and they commit to writing, these writings are said to be inspired, and to contain the revealed mind and will of God; and by the Christians these writings are called, by way of excellency, the Scriptures.

The

The Scriptures contain two volumes or canons of sacred writings; the first is proper to the Jews, and is called the Old Testament; the other is proper to the Christians, and is called the New Testament; and both together we call the Holy Bible, or (simply) the Bible. The Christians acknowledge the whole Bible, the Jews only the first part, for the word of God.

The Old Testament contains various particular books, which are divided under the following general heads, viz. (1.) The Pentateuch, which contains the five books of Moses, viz. Genesis, Exodus, Leviticus, Numbers, and Deuteronomy. (2.) The first prophets, containing Joshua, Judges, the two books of Samuel and Kings. (3.) The latter prophets: the greater, as Isaiah, Jeremiah, Ezekiel, Daniel: the lesser, called the twelve minor prophets, viz. Hosea, Joel, Amos, Obadiah, Jonah, Micah, Nahum, Habakkuk, Zephaniah, Haggai, Zechariah, Malachi. (4.) The Hagiography, which contains the books of Job, Psalms, Proverbs, Ecclesiastes, Canticles; to which some add the historical Books of Ruth, Ezra, Nehemiah, Esther, with the Lamentations of Jeremiah, and the two books of Chronicles, which complete the Old Testament.

The books of the New Testament may be ranged under these following classes: (1.) Evangelical; as the four gospels, by St. Matthew, Mark, Luke, and John, who are therefore called evangelists. (2.) Historical; as the Acts of the Apostles. (3.) Epistolical; as the epistles of St. Paul to the Romans, Corinthians II. Galatians, Ephesians, Philippians, Colossians, Thessalonians II. Timothy II. Titus, Philemon; that to the Hebrews, one of James, two of Peter, three of John, and one of Jude. (4.) Apocryphal; as the book of Revelations. These complete the canon of the New Testament.

The books of the Old and New Testament being adjudged authentic, that is, of divine authority, and universally received by the Christian church, are therefore made the canon or rule of faith and practice in matters of religion; and so they are called canonical, in opposition to those contained in the Apocrypha, whose authenticity is doubted, and therefore they are said to be apocryphal. These are the books of Tobit, Judith, Wisdom, Ecclesiasticus, Baruch, two books of

The Old Testament.

The New Testament.

The Bible.

The divisions of the books of the Old Testament into the Pentateuch.

Prophets former and latter.

The Hagiography.

The books of the New Testament.

Evangelical. Historical, Epistolical.

Apocryphal

Scriptures canonical and apocryphal.

Esdras, two of the Maccabees, the additions to Esther and Daniel, the Prayer of Manasses, the Story of the Three Children, of Susannah, and of Bel and the Dragon. Though the papists hold these books to be authentic for the most part, and are therefore most of them received into the canon of inspired writings by the Council of Trent, &c.

Reasons to
prove they are
apocryphal.

Rom. iii. 2.

The reasons
proving the
authority of
the books of
the Old Testa-
ment.

But that they are apocryphal, and not of equal authority with the other, the protestants prove by the following reasons: (1.) Because they were wrote by none of the prophets, but after Malachi, the last of the prophets. (2.) Because they were not wrote in the Hebrew tongue, as were all the other books of the Old Testament, but in the Greek. (3.) Because the Jews never received them into their canon of authentic scriptures, yet to them were committed the oracles of God, faith St. Paul. (4.) Because they are no where cited in the New Testament by Christ or his apostles; and therefore not acknowledged by them. (5.) Because in them we find many things inconsistent both with themselves and with the canonical books: besides several absurdities, fables, &c. not worth minding.

That the books of the Old and New Testaments are authentic, or of divine authority and inspiration, the following arguments sufficiently prove, viz. (1.) The law of Moses was delivered to him by God himself on mount Sinai, attended with various wonders and terrible prodigies, in the open sight of the whole congregation of the Israelites; and therefore they could not be imposed on in that respect. (2.) The same contains the predictions of various future events; all which it also proves to have come to pass. (3.) The books of the prophets contain several predictions, which were proved to happen accordingly, both by profane historians, and the writers of the New Testament. (4.) They say nothing but what is consistent with Moses's law. (5.) They contain nothing repugnant to the Christian revelation afterwards made. (6.) They speak with the greatest reverence of God, always recommend virtue, and inveigh against vice. (7.) Their authority is attested by the writers of the New Testament. If then the authority of the latter be good, that of the former must be so too.

But

But the authority of the books of the New Testament is abundantly proved from these evident reasons: (1.) The writers thereof were able to know and write the truth; because what they writ was not of things in antient times, in distant or foreign countries, or done in a corner; but in their own days, in their own country, in the open view of multitudes for a long time; and of which they themselves were eye and ear-witnesses. (2.) As they were not, nor could be imposed on themselves, so neither can they be supposed capable of imposing on others, for the following reasons: (1.) They were simple, plain, illiterate plebeians, tradesmen, and mechanics, for the most part; and therefore could not pretend to art and craft enough to impose upon the whole world. (2.) If they were as cunning as you please, 'tis certain their relation, if fictitious, is very ill contrived, and could never have succeeded as an imposture. For, (3.) there were enough living in and about the same country and regions to confute them to their faces, had their story been false, and not a well-known matter of fact. (4.) But 'tis plain from many passages, (as where they speak of their own failings; their meanness of parentage, person, and profession; their contention with each other, &c.) they could have no intention of fallacy, or imposture; because it would then have been their interest to have concealed such particulars. (5.) The religion which they promulge, prohibits all lying, under the penalty of eternal condemnation; whereof if impostors, they were self-condemned. (6.) 'Tis evident, since the whole tenour of the New Testament turns upon the praise of virtue and purity of life, and a manifest abhorrence and prohibition of all kind of vice and wickedness, that nothing can be more absurd, than to imagine it proceeded from the devil, and not from God, from whom alone such an excellent doctrine could be expected. (7.) There is no possibility of seeing which way those authors could make any advantage of such an imposture to themselves, or others; and to suppose they would take the pains to invent and spread one for none at all, is absurd and silly. (8.) On the contrary, they suffered many afflictions, and death itself, in defence of their doctrine; which must either argue them to be true and sincere, or infatuated with the love of what all the world besides ab-

The authority of the books of the New Testament proved by divers arguments.

hor. (9.) The manifest end and purpose of the Christian religion is the glory of God, and the present and future happiness of man; which things are only worthy of God, and could therefore only come from him. (10.) The New Testament contains nothing contrary to reason, though it improves our natural reason very much; and is therefore good, and worthy our belief. (11.) The account of our Saviour Jesus Christ, the burthen of the New Testament, is in all respects conformable to the predictions of the Messiah in the Old Testament; and therefore the story of him must be true. (12.) Lastly, several of the principal facts related in the New Testament, are likewise mentioned in the profane histories of those times, and also by the Jewish historians themselves; by which means the truth of them is sufficiently confirmed.

The Scriptures
are the oracles
of God.

The sacred writings then of the Old and New Testament are the oracles of God, or his revealed will to mankind. They therefore contain every thing necessary for us to know concerning God and ourselves; and to enable us with certainty to conduct our moral and religious life in such wise as shall render us acceptable to him whilst here, and to secure our future and eternal happiness in the world to come. But to be more particular, the great use of the Scriptures, or revelation, is most remarkable under the following heads, viz.

The great advantage of the
Scriptures, by
informing us
of the universal
state of the
natural world.

First, By the Scriptures we learn that the worlds were framed by the word (or power and wisdom) of God; that the heavens and the earth were of old, together with the sun, the moon, and the stars, the handy-work of that great God, whose power and wisdom are infinite and unsearchable. From thence we learn the original formation of God, and the production of beasts, fowls, fishes, trees, and plants; which the heathen in vain sought after. From thence only we have any memoirs of the innocent and lapsed state of man, and manner thereof. From thence only we have an original and perfect account of the universal deluge, and the cause and manner thereof: also how the world was again restored and re-peopled; with the difference between the ante-diluvian and post-diluvian world in many respects. Again, from thence we know God's government of the natural world: and, lastly, his design to bring about its final catastrophe by
a general

a general conflagration, or burning: and its renovation thereafter, or new state of the heavens and the earth. None of which great points could be known from natural light, by the wisest Heathen philosophers.

Secondly, The Scriptures give us much clearer and more adequate notions and sentiments of God, and of his various attributes and perfections, than is discoverable by the mere light of the most rectified reason. They also acquaint us much with the metaphysical nature of spirits, and immaterial beings: as of God himself; of the various orders of angels, as seraphims, cherubims, &c. and the great defection of some of them from their first state of celestial glory, and their condemnation to the perpetual horrors of the infernal state. We farther learn from thence the intercourse and ministry of angels and good spirits, for the carrying on the state of the moral world, as well as the natural; and consequently of the more immediate and special providence of God, with respect to mankind.

Thirdly, The Scripture not only contains the most perfect system of morality, but refines and illustrates every moral virtue, and recommends and enforces the practice thereof, with the additional motives of temporal and eternal felicity. If then the heathen could advise to a moral and virtuous life, only because virtue seemed its own reward, with how much more force and power doth it stand recommended in Scripture, when, besides its own eligible qualities and merits, it has all the happiness entailed upon it, which the nature of man is capable of, or can desire? Add to this, that though vice and wickedness, in every degree, be in itself directly opposite to the moral rectitude of man's nature, and therefore such as a reasonable man must naturally abhor and detest; yet the more effectually to deter man from defiling his nature therewith, the Scriptures prohibit every species thereof with the penalty of God's wrath and vengeance. Thus virtue is encouraged, and vice prohibited, with the sanctions of rewards and punishments; and that from the authority, not of an heathen philosopher, but the great Author of nature, God himself.

The second great use of the Scriptures, in informing us of the metaphysical nature of God, angels, and the spiritual world.

The Scriptures very much illustrate and enforce the practice of all moral virtues, with the additional force of the sanctions of rewards and punishments.

Fourthly,

From them we learn the repeal of the Jewish law, and the institution of christianity.

The Scripture account of Christ.

He is the Son of God.

His incarnation.

Without sin.
The true Messiah.

The revealer of God's will.

The great antitype.

Taught the true worship of God.

His predictions.

Taught the resurrection and future judgment.

That he himself was appointed judge.

Fourthly, From the Scriptures we learn the repeal and abolition of the Jewish law of types, ceremonies, and carnal ordinances; and the institution of a more perfect, rational, and noble scheme of religion and devotion, by Jesus Christ, the promised Messiah and Saviour of the world, the Son and Anointed of God, who delegated and sent him with full power and commission so to do. And this is the greatest and most momentous point of revelation.

The doctrine of the Scriptures concerning Jesus Christ is, (1.) That he is the Son of God, and was with God before the world was made. (2.) That in time he took upon him a body of flesh, was born of a virgin, and was, to all appearance, an human person. (3.) That he grew to the state of manhood, and lived a perfectly pure and righteous life, absolutely free from sin, or culpable actions. (4.) That he declared himself to be the predicted or promised Messiah, or the Anointed of God, whom the Jews expected from their writings. (5.) That he came to reveal the mind of God his Father, and to enlighten and reform a dark and degenerate world. (6.) That he was the great Antitype designed and prefigured by the Jewish law of types and ceremonies, and that therefore in him their law was compleated and fulfilled; and so, the end being answered, was not to subsist any longer. (7.) That he went about doing acts of charity and beneficence; that he endeavoured to bring persons off from their corruptions, superstitions, and idolatries, to the spiritual and true worship of God. (8.) That he foretold his own death, and resurrection, after three days, from the grave, and his ascension into heaven. (9.) That he was sent to declare to the world, that God has designed, at the final period of the world, to raise the dead bodies of all, both good and bad, from their grave, and to judge them for the things done in this life, and to award and assign every one his doom, according to the merit or demerit of their lives. (10.) That all who are alive at that great day shall be changed; and that he himself was appointed by God his Father to be the awful Judge of quick and dead. (11.) That God had made it the indispensable duty of every man to believe the doc-

trines

trines which he preached; and to confirm the truth of all his pretensions, he wrought divers miracles in the open view of all men, by the mighty power of God his Father. (12.) That he made choice of twelve select men, called his disciples, and sent them forth to preach and promulge his doctrine, and gave them power to work miracles also in confirmation of it. (13.) That being about the thirtieth year of his age, he was baptized by his *prodromus*, or forerunner, John the Baptist; and was in that action recognized the Son of God, by an audible voice from heaven; and consecrated by the descent of the Holy Spirit in the shape of a dove. (14.) But notwithstanding the invincible power of heavenly eloquence, of supernatural works and wonders, of purity and perfection of doctrine, the Jews would not believe him, nor receive him; but remained incorrigibly obstinate and inimicable. (15.) That by constantly reproving their incredulity, superstition, hypocrisy, and other innumerable vices, they conceived an hatred against him; and at last conspired his death, which they soon after effected; he being hanged on the cross as a malefactor to his prince and country. (16.) That foreseeing his death near at hand, he instituted the sacrament of his supper, (which we call the eucharist) as a memorial of his body broken, and his blood shed, for the remission of sins. (17.) That the third day after his burial, he arose from the grave, and conversed with his disciples in the open sight of all, as he had before predicted. (18.) That after his resurrection, he called together his disciples, and commanded them to go abroad into the world, and preach the gospel of repentance, and remission of sins, in his name, to all persons in all nations, beginning at Jerusalem. (19.) That he enjoined them to baptize all whom they could prevail with to repent, and believe the gospel, and that in the name of the Father, Son, and Holy Ghost, and promised his presence with them to the end of the world. (20.) That immediately after this he ascended up into heaven in a most public manner; that he there acteth the part of an advocate and intercessor with God the Father for us sinners here below, who believe in him, and endeavour to conform our lives to his laws; and that it is in the power of every individual person so to do, if he pleases.

He wrought miracles.

Chuses his twelve disciples.

His baptism.

Recognized the Son of God.

The Jews reject him.

They conspire, and put him to death.

The Eucharist or Lord's Supper instituted.

His resurrection.

Preaching the gospel instituted.

Baptism instituted.

His ascension into heaven.

Our advocate and intercessor.

These

Christianity
defined.

These particulars concerning Christ make the substance or principal part of christianity ; which is nothing else but our professing Jesus Christ to be the true Messiah and Son of God, the Saviour of the world, and who hath given us a true revelation of the mind and will of God ; which we are obliged to regard as our sole rule in all the affairs of religion, both in faith and practice.

Christendom.

The extent of Christianity in the world, or all those several kingdoms and countries where the Christian Religion is professed and embraced, are, taken together, called Christendom ; and this consisteth of many (some more general, some more particular, &c.) different religious societies, which are called churches.

A Christian
church de-
fined.

A Christian Church is a society or congregation of men and women, who are called out from the vicious world by the preaching of the gospel, and are regulated in all the parts of their ritual discipline, and articles of faith, by the plain rules and prescriptions of the New Testament ; and whose lives are correspondent to their holy profession.

Ministers of
the church
extraordinary
and ordinary.
Extraordina-
ry, viz.
Apostles.
Prophets.

The Ministers of the Christian Church, in the primitive state thereof, were extraordinary or ordinary. The extraordinary were chiefly three, viz. (1.) Apostles, who were delegated by Christ with power and commission to preach the gospel, and to work miracles in confirmation thereof, among all nations. (2.) Prophets, who were not such as simply foretold things, but those to whom God was pleased to reveal his more secret counsels and designs, and who related and preached the same to men. A Christian prophet was God's nuncio. (3.) Evangelists, such who were assistants to the apostles in preaching the gospel ; and were endued with many extraordinary gifts of the Holy Spirit, as of languages, interpretation, &c. But since the establishment of Christianity in the world, these extraordinary offices have ceased.

Evangelists.

Ordinary
ministers.
A bishop.
His govern-
ment.

The ordinary Ministers of the Christian Church are principally three. (1.) A bishop, (called in Greek *episcopus*) who had the oversight of the flock or church of Christ ; to him pertained the preaching of the word, and due regulation of the church both in faith and manners. And this rule and presidency of the bishop

is

is called Episcopacy. (2.) Presbyters, or elders, or priests; these were such as preached the word, and administered the sacraments, and performed all the other sacred functions of the ministry under the inspection of the bishop. But it is a controversy whether the Scripture doth not intend the same person or officer by the appellations Bishop and Presbyter. The power of the presbyter is called presbytery. (3.) Deacons; these were such as officiated in that part of the Christian ministry which related to the poor; and their business was to take the collections of money made in the church, and to distribute it to the necessities of the poor, and other sacred uses. And their office, properly speaking, is called the ministry, or deaconship. These officers are all perpetual in the Christian church.

Orthodoxy (with Christians) is that faith, belief, or opinion, which is strictly right and true, and in every part comportant with the Scripture rule and declaration of Christian doctrine. The contrary to this, viz. wrong or false belief, is called heterodoxy.

Herefy sometimes signifies a sect or party of Christians, distinguished from the general church, by some particular and peculiar notions, opinions, or practices. Sometimes it signifies an opinion or sentiment contrary to that which is generally received and esteemed orthodox. The first broacher of such opinions, &c. is called an heresiarch; and all those who embrace it, heretics.

Schism is an unnecessary separation of one or more members from the body of a church. And the persons thus dividing, or causing such a division, are properly called schismatics. But 'tis common for the general church to term those who dissent or divide from it heretics and schismatics, whether they really deserve it or not.

The general division of the Christian church is into the Greek and Roman. The Greek church is governed by four patriarchs, viz. of Alexandria, of Jerusalem, or Antioch, and of Constantinople; the latter of which calls himself the Oecumenical patriarch, on account of his residing in the Imperial city, and his larger jurisdiction than the rest. The Greek church holds, (1.) That the Holy Ghost proceeds only from the Father, not from the Son, but by the Son. (2.) Yet they believe him to be God, and the Spirit of the Son.

Episcopacy.
Presbyters,
elders, priests.

Their power.
Presbytery.
Deacons.

Deaconship.

Orthodoxy
and hetero-
doxy, what.

Herefy, what.

Hereiarch.
Heretics.

Schism, what.

Schismatics.

The great di-
vision of the
Christian
church into
the Greek and
Roman.

The principal
tenets of the
Greek church,
from Sir Paul
Ricant.

Son. (3.) They reject the pope's supremacy. (4.) and They attend prayer morning and evening, on Sundays (28.) or ca and holidays. (5.) They enjoin the observation of saints divers fasts and feasts in the church. (6.) Also obedi- recke ence and honour to their priests. (7.) They enjoin Rom confession of sins four times a year to a regular priest. sary (8.) They forbid the laity to read the books of here- from equa tics. (9.) They enjoin prayer for kings, and all civil justifi T and ecclesiastical magistrates. (10.) They pray for the the conversion of schismatics and heretics. (12.) They then forbid the laity to invade the rights and benefits of the vern clergy; and all kind of sacrilegious acts. (13.) They year forbid marrying in Lent, or other fasts. (14.) They dow prohibit the frequenting theatres, or to imitate any he r Gentile customs. (15.) They have four Lents; the or great Lent before Easter; the third begins the week Th the after Pentecost; and the fourth on the first of August. bish the (16.) At these times they eat nothing that has blood hea he or oil, nor milk-meats; but herbs and shell-fish. And of he they will scarce allow flesh-broth or an egg at those times, even to a sick patient, though his life depend on it. (17.) Their priests think it no sin to be drunk of an on a festival-day. (18.) They are as ridiculous in the is is histories of their saints as the popish legends. can as (19.) They baptize infants at eight days old, by as (1 dipping them three times under water in the name of 11) for the Trinity. (20.) They use a kind of exorcism, (1 he for unction, crossing, sealing, &c. in their baptism. (21.) ta w They have only one godfather, or godmother, accord- pe m ing to the sex of the child. (22.) They use a par- g b ticular chrism or anointing, to confirm the person bap- (tized with a deal of ceremony. (23.) In the Eucharist sp f they seal their bread in the form of a cross; their bread (t is leavened; they communicate in both kinds, but it d together in a spoon from the hand of a priest. (24.) and They acknowledge no transubstantiation, yet pay a sort of adoration to the sacrament. (25.) Their ex- communications are made on very frivolous occasions, though full of terrible curses. (26.) They believe that departed souls go either to heaven or hell immediately. (27.) They call marriage one of their seven mysteries, and

(4.) and absolutely prohibit the marrying a fourth time. (28.) They worship painted images, but curse graven or carved ones. (29.) In the worship of angels and saints, they differ little from the papists. (30.) They reckon seven sacraments, the same as the church of Rome; but hold only baptism and the eucharist necessary to salvation. (31.) They reject the Apocrypha, from being canonical; yet hold some traditions of equal authority with the Scripture. (32.) They hold justification from faith and works conjointly.

The Roman Church holds, (1.) That Peter was the prince of the apostles, or had the primacy among them. (2.) That he came to Rome A. C. 42. governed the church there as supreme bishop twenty-four years and a half; and was crucified with his head downwards. (3.) That he was infallible. (4.) That he received from Christ the keys of heaven and hell; or power to anathematize, and to absolve sins. (5.) That they have had an uninterrupted succession of bishops from Peter, whom they call popes. (6.) That therefore the pope is the supreme or universal bishop or head of the Christian church. (7.) And that likewise he is infallible. (8.) That he also inherits the power of absolving persons from sin, or binding them with anathemas or curses, as Christ's vicar. (9.) That he is supreme head of the state as well as church; and can inaugurate and depose kings and princes, as well as ordain and excommunicate bishops and priests. (10.) That he can grant indulgences and dispensations for committing sins, and perpetrating horrid crimes. (11.) They believe that Christ did really descend into hell, and released the souls of former saints there detained. (12.) They hold a purgatory, or a place where souls are purified by fire, before they enter into perfect bliss. (13.) They pretend also, that by saying mass the priests can deliver souls from the fire of purgatory. (14.) They suppose the same is effected also by works of supererogation, and the prayers of angels. (15.) They introduced the sign of the cross, chrisms, sponsors, sprinkling, &c. in baptism. (16.) They forbid the reading the sacred Scriptures by the laity. (17.) They receive the Apocrypha into the canon of the authentic scripture. (18.) They hold divers traditions by which they pretend to supply the defects of

The doctrines, tenets and superstitions of the church of Rome.

Holy

Holy Scripture. (19.) They reckon seven sacraments, viz. baptism, confirmation, the Lord's Supper, penance, extreme unction, orders, and marriage. (20.) In the eucharist, they mix water with the wine, and refuse the cup to the laity; and use unleavened bread. (21.) They hold transubstantiation, or that the bread and wine, in the eucharist, by the consecration of the priest, is changed into the real body and blood of Christ; which they first cause to be adored with many superstitions, and then very reverently eat him. (22.) They worship the Virgin Mary, angels, saints, and images of all sorts, by prayer, offerings, &c. (23.) They enjoin celibacy, or a single state, to their priests. (24.) They are forbid also to read the books of heretics. (25.) They make a distinction of mortal and venial sins, to serve the purposes of avarice and ambition. (26.) They enjoin confession of sins in the ear of a priest, which they call auricular confession. (27.) They hold good work meritorious, and sell works of supererogation very often to poor bigots for the expiation of their crimes very dearly. (28.) They enjoin the keeping the fast of Lent with strict abstinence from all flesh; yet allow the eating fish; so near a-kin is their philosophy to their divinity. (29.) They say mass for the dead as well as the living, to make the greatest use (or gain) of godliness. (30.) They say the fire of purgatory hath eight degrees of heat, and that of hell but four. (31.) They make it a damnable sin for any to doubt of their dictates, though ever so absurd and ridiculous. (32.) They impose penance for sin, but you may often exchange the painful for the pecuniary; such is their clemency! (33.) They profess poverty; and have instituted an order of mendicant friars; so much do they abhor greatness, riches, and honour! (34.) They count all other religions heretical and damnable. (35.) They pretend to have the power of working miracles. (36.) They canonize persons for saints; but money, more than holiness, is necessary for this. (37.) They profess chastity, both men and women; as we have very notable instances in the orders of monks and nuns. (38.) They are very jealous in the cause of religion, as many have experienced by the cruel, inhuman, and bloody court of inquisition. (39.) The multitude of ceremonies, fasts, festivals, processions,

cessions, pilgrimages, orders, offices, and innovations of all kinds, are too tedious to relate, and too incredible to believe: so that if you take popery in its native dress and complexion, you must be pretty wise to know whether it is in the whole most like Christianity, Judaism, Mahometanism, or Paganism.

These amazing corruptions in the Roman church occasioned the separation of a large body of people from her in the days of king Henry the eighth; who, from their protesting against popery and Romish decrees, were called Protestants: and who, since their general reformation, have variously subdivided from each other, and, according to their different opinions and practices, have obtained peculiar appellations: as Lutherans, Calvinists, who follow Martin Luther, and John Calvin, two of the first reformers: Arminians and Socinians, the followers of James Arminius, and of Socinus: the Unitarians, who allow but one person, viz. of the Father, in the godhead; and Trinitarians, who assert three persons in the godhead, as of the Father, Son, and Holy Ghost, according to Athanasius's creed. But the most substantial divisions of protestants are the following, viz.

Protestants;
whence.

Lutherans.
Calvinists.
Arminians.
Socinians.
Unitarians.
Trinitarians.

The Church of England, which is established by the authority of parliament; and is therefore the national church in England, and most parts of the British king's dominions: the hierarchy or government whereof is archiepiscopal; and for the doctrines and practical worship therein, they are sufficiently known. All those who do not join with this established church, are called non-conformists, or dissenters. As,

The church of
England.

Dissenters:
Presbyterians.

I. Presbyterians, who assert the government of the church is not by bishops, but presbyters, or ruling elders; and that there is no order in the church of divine institution superior to that of a presbyter; who therefore hath power to ordain ministers, which is by fasting, prayer, and imposition of hands. They have three courts. (1.) The minister of each parish, with his elders, and the congregation. (2.) A court of presbytery; consisting of a great number of ministers and elders associated for governing particular churches. (3.) The highest court is a synod, which they hold may be provincial, national, or oecumenical; and allow of appeals from the lesser to the greater. They

D

baptize

baptize by sprinkling, as does the church of England, and their common worship consists in extempore prayer, preaching, and singing of psalms.

Independents. II. Independents, so called, because they hold that every particular congregation hath a complete power of jurisdiction within itself, independent of any bishop, synod, or council; and so discard all superiority or subordination of particular churches to one another. In most other respects they agree with the Presbyterians.

*Anabaptists,
or Baptists.*

III. Anabaptists; or (as they call themselves) Baptists; their main distinguishing principle is baptism, by dipping or plunging the person wholly under water, and reject the method of sprinkling, used by others, as an innovation, or human invention, and altogether unscriptural. For the same reason, they insist upon that adult or grown persons, not infants, are the proper subjects of baptism; because, as the scripture requires, they only are capable of repentance and faith, which are the prerequisites thereto. For their opinion they alledge, (1.) The precept and precedent of Christ himself. (2.) And of the apostles. (3.) The practice of the primitive church for the first three centuries. (4.) The proper etymology of the word Baptize, which they say will not admit sprinkling. (5.) The several versions of the New Testament, which all render the word in favour of dipping, not of sprinkling. (6.) From the design of the ordinance, they argue infants cannot be the subject, because not capable of answering it. (7.) The utter silence of the scripture about pedobaptism. (8.) The words of the rubric of the church of England itself, which absolutely enjoin dipping, but sprinkling only on conditions. (9.) The confessions and concessions of several bishops and learned doctors of the church in favour of dipping only the adult. To all which, and many other arguments, the Pedobaptists return various answers; but whether sufficient, is not my business here to say. This denomination comes near the Presbyterians in their hierarchy; and acknowledge Hebrews vi. 1, 2, for a kind of summary of their fundamental doctrines and principles.

IV. Quakers, so called at first from some of them quaking or trembling in their religious meetings. They disown not the name Quaker, when used by others as a mark of distinction only, and not in derision. Their tenets, or religious principles, are largely set forth and vindicated in an Apology first published in 1675, by Robert Barclay, which has been often since printed without any alteration; to which I shall refer the reader for their noted doctrine of the light within, and their disuse of all external ceremonies and services in the worship of God but preaching and praying; and even the two sacraments, baptism and the eucharist. Their other modes are too well known to need description. They first appeared about the year 1650.



Of JUDAISM; or the RELIGION and STATE of the JEWS.

Hebrews,
whence so
called.

THE people of whom we are now about to speak, were originally called Hebrews: Abraham was first called by this name by the Canaanites, Gen. xiv. ver. 13. and from him it continued with all his posterity. See Gen. xxxix. 14 and 17. Now Abraham was called an Hebrew, either from his being of the family of Heber, Gen. xi. 14. who was in the seventh generation before him, or else from a word of the same sound nearly, which signifies beyond, or, to pass over; because he lived beyond the river Euphrates in Mesopotamia, and from thence he passed over the said river to come into the land of Canaan.

Israelites,
whence.

Afterwards, when Jacob, the grandson of Abraham, received the appellation of Israel, Gen. xxxv. ver. 10. the Jews, being the descendants from him, were called Israelites; and the land of Canaan, which they afterwards inhabited, was also called the land of Israel.

Land of Israel
Jews, whence.

From Judah (which, in the original, is Jehudah) the fourth son of the patriarch Jacob, and the head of the principal of the twelve tribes, the Israelites came to be called Jews; and the land of Israel, the land of Judah; and simply Judea in all succeeding ages.

The original
of the Jewish
state and re-
ligion.

The story of the servitude of the Hebrews under the Egyptians, their miraculous deliverance from thence by Moses and Aaron, and their receiving the model of their civil, moral, and religious state, in their returns from thence to the land of Canaan, are particulars at large related in the Pentateuch of Moses's own hand-writing. The latter article of which, concerning the religious and civil state of the Jews, after they were settled in their own land, is what we shall here take a general survey of.

Jewish laws
threefold.

The laws of the Jews were threefold, viz. (1.) Moral; (2.) Ceremonial or ecclesiastical; and (3.) Civil or political. And all these were sanctioned either

either by divine or human authority. And lastly, they were divided into the written law, and the oral law. The written law was that which God delivered to Moses from mount Sinai; and which he immediately committed to writing, for the use of the Jewish church, as it is contained in the books of Exodus and Leviticus. The oral law is that which was (as the Jews pretend) delivered to Moses at the same time from mount Sinai; which they say was the explication of the written law; and which Moses delivered by word of mouth to Joshua, and he in the same manner to the seventy elders, they to the prophets, these to the great synagogue, and from thence it was delivered successively to the wisest rabbi's; till at last it was collected together, and thrown into writing, lest it should be lost in the extreme dispersion of the Jews, and which they call the Talmud. The Jews prefer the oral law, or the Talmud, to the written law of Moses. They give these reasons: (1.) The oral law is the foundation of the Mosaic law; this being delivered in one day, that required thirty-nine. (2.) It is a large commentary on the Mosaic law, and explains (say they) its dark and doubtful passages. (3.) They say the law of Moses is very scanty and defective, to which the Talmud is a very ample supplement; and such other stuff. Wherefore, say they, nothing is superior to the most holy Talmud. In this respect then, you see how much the papists and they are alike.

Written and oral law.

Written law, what.

Oral law, what.

The Talmud preferred by the Jews to the law of Moses, and why.

The whole body therefore of the Jewish laws are contained in the books of the Old Testament, and the Talmud; in both which we consider two parts, viz. the text, and the explanation. The text of the Old Testament, by the Jews in their own tongue, is called the Torah, especially Moses's law. And the explanation thereof, by way of paraphrase, is called the Targum; which signifies, in Chaldee, the same thing as paraphrase; they being wrote in the Chaldean tongue long after their captivity. Of these Targums there are two of principal notice, viz. the Targum of Onkelos, on the Pentateuch; and the Targum of Jonathan, on all the prophets. There are other Targums, but of less note and worth. 'Tis uncertain who the famous Targumist Onkelos was, and when he lived; but for the other Targumist Jonathan, 'tis certain he was the

The Torah, what.

The Targum, what.

The Talmud
consists of two
parts, viz.
the Mischnah,

and Gemara.

The six great
parts of the
Talmud, viz.
Zeraim.
Moed.
Nashim.

Nazikin.

Kodaschim.
Tahoroth.

The Peruschim,
or Jewish
commentaries
on the Old
Testament.

The moral
law of the
ten command-
ments, called
the Decalogue.

son of one Uziel, and the chief scholar of the celebrated Jewish doctor Hillel, before our Saviour's birth.

Concerning the other part of the Jewish pandects, or body of laws, the Talmud; it consisteth of two parts also; viz. the text, which they call the Mischnah, (i. e.) the secondary law, which contains all the oral traditions of the fathers and rabbi's, from Moses to the time of Rabbi Judah the Holy, who collected and compacted them all into this part of the Talmud, about 150 years after Christ. The other part of the Talmud is called Gemara, (i. e. the supplement) which contains variety of commentaries on the Mischnah, or first part, with the discussion and decision of various opinions. This was added about A. C. 500.

The whole Talmud is divided into six general parts, as follow: (1.) Zeraim, seeds. This treats of the various kinds of seeds, herbs, trees, fruits, &c. of the earth. (2.) Moed, which treats of divers feasts and solemnities. (3.) Nashim, of women. This treats of women, of marrying and divorcing wives, and all other incidents proper to them. (4.) Nazikin, of damages. This treats concerning damages, nuisances, &c. with their penalties, and compensation. (5.) Kodaschim, of holinesses; this treats of various kinds of sacrifices, and other sacred things. (6.) Tahoroth, of purifications; which treats of all kinds of purity, and uncleanness and pollutions of vessels, and other things.

Besides the Targums, or Chaldee paraphrases on the books of the Old Testament, there are various commentaries wrote by the rabbi's, the chief of which are these three, viz. (1.) The Commentaries of Rabbi Solomon Jarchi, which are short and difficult. (2.) Those of Rabbi Aben Ezra, which are generally larger and easier. (3.) Lastly, the Commentaries of Rabbi David Kimchi; these are very large, and very easy to be read and understood. These Peruschim, or rabbinical commentaries, are very useful and necessary to be understood by Christian divines.

Having taken a view of the books containing the Jewish laws, we shall next take notice of the laws themselves. The first sort of which is the moral law, which they received a summary of from God himself, in ten general precepts, and wrote with God's own hand

hand on two tables of stone, which he delivered to Moses on mount Sinai, for the use of the Jewish church. These ten commandments are called the Decalogue, and may be seen in Exod. xx. and Deut. v. To these general heads of morality contained in the Decalogue, there were added divers particular rules and precepts suited to the cases of private life; all which Moses wrote in a book, and then read it to the people.

To these Mosaical precepts of morality, which are of divine authority, may be added the seven precepts of Noah, which are merely traditional; Noah having (as the Jewish doctors pretend) received the first six by tradition from Adam, and added the seventh himself, from whom the rabbinical doctors say they have them also by tradition: they are as follow. (1.) To renounce all idolatry. (2.) To bless the name of God. (3.) To abstain from shedding blood, or murder. (4.) Not to uncover one's nakedness, by which fornication, &c. is forbid. (5.) Not to steal, or commit rapine. (6.) Judgments or punishments of malefactors. (7.) Not to eat any part of a beast taken from it alive. These traditional precepts of Noah were to be acknowledged and observed by those whom the Jews called the proselytes of the gate.

The seven precepts of Noah, by tradition.

What they be.

By whom to be observed.

The ceremonial law of the Jews was that which appointed the rites, ceremonies, and ordinances, which made up the Jewish service and worship. This consisted principally of the following parts. (1.) Sacrifices and offerings. (2.) Libations. (3.) Prayers. (4.) Preaching. (5.) Confession.

The ceremonial law.

The Jewish worship.

The sacrifices were made only of five sorts of creatures, viz. oxen, lambs, goats, turtle-doves, and young pigeons. They were of four sorts. (1.) The Holocaust, or whole burnt-offering, every part whereof was consumed by fire, Levit. i. (2.) The meat-offering, consisting of fine flour mingled with oil, &c. See Levit. ii. (3.) The peace-offering, the manner of which see in Levit. iii. (4.) The sin-offering, of which you have an account in Levit. iv. and following chapters.

The sacrifices, or of what made.

Of how many sorts.

The libations were those drink-offerings which were added to the sacrifices. These were made of various quantities of strong wine, which was poured forth to the Lord in the holy place of the tabernacle; concerning which you may read Numbers xxviii. and xxix.

Libations, or drink-offerings.

Their prayers. Their prayers made another part of their service; these at first were very few, but afterwards increased to a very large bulk. Their liturgies and rubrics are so long, tedious, and perplexed, that in this respect, as well as several others, they vie with, if not exceed, the superstitious Roman-catholics. The most solemn part of their prayers are those which they call Shemoneh Eshreh, or the eighteen prayers, which they say were composed by Ezra and the great synagogue; to which another prayer was afterwards added.

Their reading and expounding the Scriptures.

Kiriath Shema.

Reading the law.

Reading the prophets.

Preaching.

The Jewish festivals.

The Sabbath.

The Passover.

Of Pentecost.

Of tabernacles.

The reading and expounding the Scriptures made the most considerable part of the service of the latter Jews. The reading the scriptures is of three sorts. (1.) The Kiriath Shema, or reading the Shema; it consists in reading three portions of the Scripture, viz. from Deut. vi. ver. 4 to 10. from Deut. xi. ver. 13 to 22. and from Numb. xv. ver. 37, to the end of the chapter. This reading the Shema is accompanied with several prayers and benedictions. (2.) The reading the law; which in the Hebrew bibles is divided into 54 sections, one of which they read on each Sabbath, and so the whole law was read once a year. (3.) The reading of the prophets. In the time of persecution under Antiochus Epiphanes, the Jews were forbid to read the law; instead of which they substituted 54 sections out of the prophets, and read them to the times of the Maccabees, who restored the reading of the law, and then both were read; the one for the first, the other for the second lesson. See Acts xiii. 15 and 27. After reading these lessons, they preached to the people.

The next thing respecting the Jewish worship is their festivals; of which they have several. As, (1.) The Sabbath-day, which they dedicated wholly to rest and religious purposes. (2.) The passover; for the time and manner of celebrating it, see its institution in Exod. xii. This was called the feast of unleavened bread. (3.) The feast of Pentecost; so called because it was the fiftieth day (or seven weeks) after the second of the passover; its institution is in Levit. xxiii. 17, &c. The feasts of the Passover and Pentecost answer to our Easter and Whitsuntide. (4.) The feast of tabernacles; during which the people lived in booths, which was seven days. See Levit. xxiii. 34. and Numb. xxix. 12. (5.) The

(5.) The feast of trumpets; this began the first day of the month Tifri, and was proclaimed by blowing of trumpets. (6.) The feast of expiation, called the day of atonement; and this was the day on which the priests went into the sanctuary. See Levit. xxiii. 27, &c. (7.) The feast of new-moons; this was every first day of their months. See Numb. xxviii. 11. (8.) The sabbatical year, or year of rest, wherein they neither sowed nor reaped; this was every seventh year; Levit. xxv. 2, 3, 4. (9.) The year of jubilee; which was every fiftieth year: this was a Sabbath of annual Sabbaths; this was the last feast God commanded the Jews, and the most solemn; for then all estates alienated returned to those who had sold them, and slaves recovered their liberty. (10.) Feast of Purim, or lots; see its original in Esther ix. 21. In this feast the history of Esther was read, and at every mention of Haman, the Jews smote upon their benches and seats, as if they would knock him on the head. (11.) The feast of dedication; of this we read John x. 22, &c. This was an anniversary or yearly solemnity appointed by Judas Maccabæus in commemoration of the Jews deliverance from the tyranny of Antiochus; concerning which see 1 Maccabees iv. All festivals began and ended on the evening of the day.

Of trumpets.

Of expiation.

Of new moons

The sabbatical year.

Of jubilee.

Of Purim, or lots.

Of dedication.

Places of divine worship.

The tabernacle.

The temple.

Holy of holies.

Sanctuary.

Court.

Synagogues.

Proseuchæ, oratories, or houses of prayer.

The places consecrated to divine service under the Jewish dispensation, were, (1.) The tabernacle, which was moveable, and but for a time, viz. of their sojourning state. (2.) The temple built by Solomon. In both these there were three remarkable parts, viz. 1. The sanctum sanctorum, or holy of holies, the most holy place; into which only the high-priest might enter, and that but once a year; which was on the feast of expiation, to make an atonement for the people. 2. The sanctuary, or that part before the holy of holies. 3. The court before the tabernacle and temple. (3.) Synagogues; these, with respect to the temple, were as parish-churches with us in regard of the cathedral churches. The rule was, to have a synagogue in every place where there was ten batelnim, or persons of full age, and free condition, always ready to attend the service of it. (4.) The Proseuchæ, oratories, or houses of prayer. These were not covered, but open above, like courts; and in which every one prayed

- prayed apart for himself, as in the courts of the temple. They were built chiefly on high places, and are the same, probably, which in the Old Testament are called high-places.
- High places.** As to the religious orders in the Jewish ministry, the principal was the sacerdotal order, or that of the priesthood. In this order there was one chief or head, called the high-priest. Of these Aaron was the first, and the high priesthood was peculiar, or tied, to his first-born; and that through all ages of the Jewish œconomy. (2.) The common priesthood, to which the posterity of Levi was particularly consecrated. The peculiar offices of the Aaronical and Levitical priesthood are largely set down in the books of Moses; together with the manner of the consecration and ordination proper to each. (3.) The Nethinims, who were a sort of an order of deacons; they were hewers of wood and drawers of water for the house of God. These were neither Levites, nor even Israelites, but tributary Gibeonites. See Josh. ix. 23. and Ezra ii. 43. These three orders were proper to the cathedral or temple service. But besides these, there were, (4.) Elders or rulers of the synagogues; and next to these (perchance one of them) was, (5.) The minister of the synagogue, whom they called Sheliach Zibbor, i. e. the messenger or angel of the church: in reference to whom, the bishops of the seven churches of Asia are so called, Rev. i. 20. Under these were, (6.) The Chazanim or overseers of the synagogue, who had the charge of all things in it, and kept the books of the law, prophets, liturgies, &c. with the utensils belonging to the synagogue service: but particularly the chazan stood by, overlooked, directed, and corrected those who read the lessons out of the law and the prophets. See Luke vi. 20. (7.) The next officer was the interpreter, whose business it was to render the lesson read in Hebrew into the Chaldee, which language the common people, after the captivity, could only understand; their own tongue, the Hebrew, being as unknown to them, as the Latin to us; and was learned in the same manner in schools.
- Religious orders.** Amongst the Jews we read of divers religious sects, and other distinctions of men. As, (1.) the Samaritans; who were a kind of mongrel Heathens at first, who worshipped
- Priesthood.**
- The Levitical priesthood.**
- Nethinims.**
- Elders of the synagogue.**
- The Sheliach Zibbor, or angel of the church.**
- The chazanim or overseers.**
- The interpreter.**
- The various sects and societies among the Jews.**

worshipped the God of Israel in conjunction with Pagan Samaritans. Afterwards they rejected idolatry, and conformed to the Mosaical law; besides which, they reject all the other books of the Old Testament, and all traditions, together with the temple worship at Jerusalem; asserting mount Gerizim was the place where God was to be worshipped. (2.) The Sadducees; these at first only rejected the traditions, and stuck to the written law, but afterwards they imbibed impious doctrines, denying the resurrection of the dead, the being of angels and spirits, and were in all respects a sect of Epicurean deists. (3.) The Karrites; they differ from the Jews in common, by rejecting their oral traditions, and all superstitions, and adhering strictly to the written word. (4.) The Pharisees; this was the greatest sect among the Jews, or rather the general church, in regard of which the other were dissenters. These received not only the written canon of scripture, but held all manner of traditions, and invented many superstitions, affecting to appear very ceremonious and religious, and that to a most obvious and shameful degree of hypocrisy. (5.) The Scribes; these were not a religious sect, but a profession of men following literature, and were what we call doctors or teachers; they were of two sorts, viz. such as taught the law and the prophets in the synagogues and schools; and such as taught the civil law, and were therefore called lawyers. (6.) The Nazarites; and, (7.) The Rechabites; of the first see Numbers vi. and for the latter, Jeremiah xxxv. (8.) The Essens, a sect more rigorous and enthusiastical than the Pharisees. They held absolute predestination, and denied all free-will and free-agency in man. They held a future state, but denied the resurrection of the dead, like our Quakers. They were a plain, honest, retired, and friendly society; and 'tis said they denied themselves the use of women, the pleasures of money and honours, and all other carnal and worldly delights. (9.) The Gaulonites, who sprang from one Judas Gaulonites, or otherwise called Judas of Galilee, Acts v. 35. they were therefore also called Galileans; and it was their blood that Pilate mixed with their sacrifices, Luke xiii. 1. (10.) Herodians; who (as 'tis said) were so called, because they took Herod the Great to be the Messiah, and

Sadducees.

Karrites.

Pharisees.

Scribes:

Nazarites.

Rechabites.

Essens.

Gaulonites.

Herodians.

- and honoured him with superstitious solemnities annually on his birth-day; though others give a different account of them. (11.) Profelytes; these were converts to Judaism from among the Heathens; they were of two sorts, viz. First, Profelytes of the covenant, who submitted to circumcision, and all the Mosaical rites and ordinances. Second, Profelytes of the gate, who were only tied to the observance of the seven precepts of Noah, before-mentioned: this sort was called the "stranger within thy gates," Deut. xiv. 21. (12.) Publicans; these were no sect, but civil officers, whose business was to collect the taxes and tributes imposed by the Roman emperors on such provinces as were under their jurisdiction; and were odious to the Jews, both because they were strangers, and because they exercised great injustice and oppression in executing their office among the Jews, who supposed they had no right to pay tribute at all. (13.) Besides these sects and officers, there was among the Jews a set of men called Masorites, whose employ was in numbering all the verses, words, and letters, in each book throughout the Bible. They wrote marginal notes on grammatical matters; and observed very punctually the various readings, called Keri Cetib. Keri signifies the word as it is read; Cetib, the same word as it is found written in the text of the Bible. So that Keri is only the true reading of the word in the margin, opposite to the wrong reading (or Cetib) in the text.
- Profelytes of the covenant.**
- Of the gate.**
- Publicans.**
- Masorites, their office.**
- The Keri Cetib, what.**
- The initiatory rites of the Jews.**
- Circumcision.**
- Purification.**
- Oblation.**
- The idolatry of the Jews.**
- The idols of the Ammonites**
- The initiatory rites of the Jewish church, or those whereby persons were made members of it, were, (1.) Circumcision of the male; this was called by God, a sign and seal of the covenant he made with Abraham, and his posterity, the Israelites. See its institution, and the manner thereof, in Gen. xvii. (2.) Purification, by baptizing or washing the body with water; this was succeeded by, (3.) An oblation of two turtles or pigeons. Now, since the Jews have neither altar nor sacrifice, they say circumcision and purifying sufficeth for a male profelyte; and the latter only for female profelytes.
- The Jews, before their captivity, were extremely prone to idolatry, or the worship of Heathen deities. As, (1.) Moloch, (sometimes called Milcon) the God of the Ammonites and Moabites. (2.) Adramelech,

Anamelech, Ashima, Nergal, Nifroch, Nibas, and Tartak, idols of the Assyrians; of which see 2 Kings xvii. 30, 31. (3.) Succoth Benoth; this is supposed to be an Assyrian temple, with the idolatrous rites belonging thereto. (4.) The idols of the Egyptians were Ciun or Remphan, (Saturn;) Tammuz, (or Adonis,) of which see Ezek. viii. 14. (5.) Teraphim; these were a kind of household gods, or images in human shape, which the Israelites had also from the Egyptians. Another idol of theirs was Baal-Zephon; though, according to others, it was the name of a city. Also Apis, or the golden calf, is reckoned amongst the Egyptian idols. (6.) The idols of the Moabites worshipped by the Jews were Baal-Peor, Numb. xxv. 3. and Cemosh, Numb. xxi. 29. (7.) The idol of the Zidonians was Ashtaroth, supposed to be Venus, or the moon. (8.) Baal Zebub, (i. e. the god of flies) was an idol of the Philistines. Also Dagon was another of their gods, Judg. xvi. 23. His lower part was in the form of a fish. These are the principal idols mentioned in the Old Testament; to worship which the perverse Jews often left the worship of the true God.

Of the Assyrians.

Of the Egyptians.
Teraphim, what.

Of the Moabites.

Of the Philistines.

There were divers notable things in the temple which Solomon built, too many here to relate; the most material of which were lost to the Jews in the destruction of that temple by Nebuzaradan, captain-general to Nebuchadnezzar king of Babylon. These are reckoned, (1.) The ark of the covenant, wherein were kept the two tables of the law; and over it the mercy seat, or propitiatory; from whence the high-priest received the divine oracles immediately from. viz. the ark and mercy seat. (2.) The Shecinah, or divine presence of the majesty of God, which appeared in form of a cloud over the mercy seat, between the extended wings of the cherubims. 'Tis thought these sacred oracles were uttered with an audible voice. The Shecinah, or divine presence. (3.) The Urim and Thummim, which words signify lights and perfections. They pertained to the breast-plate which the high-priest wore, but how, cannot be said; only 'twas a necessary qualification to appear before the Shecinah withal. The Urim and Thummim. (4.) The celestial fire of the altar, which at first came down from heaven, and kept burning incessantly till the temple was destroyed. See Levit. ix. 24. and 2 Chron. vii. 1. The celestial fire of the altar. (5.) The holy anointing oil; where- The holy oil. with

The holy spirit
of prophecy.

Compensated
by the pre-
sence of the
Messiah.

The Jewish
creed contains
13 articles.

The Jewish
state and go-
vernment.
Patriarchal.

Dictatorial
and aristocra-
tical.

with the high-priests and the kings were consecrated in their ordinations and inaugurations. (6.) The holy spirit of prophecy : though this did not presently cease upon the destruction of the first temple, as all the above-mentioned particulars entirely did ; none of which were found in the second temple built under Zerubbabel, the governor of Judah. But the want or deficiency of these things was abundantly compensated by the presence of him who was the desire of all nations, the truest Shecinah, and who did really fill that latter house with glory, as was foretold, Hagg. ii. 7.

The Jewish creed consisteth of the following thirteen articles. (1.) There is one God, Creator of all things ; all-perfect and sufficient. (2.) That he is an uncompounded, indivisible essence. (3.) That he is immaterial. (4.) Absolutely eternal. (5.) Alone to be worshipped, without any mediators or intercessors. (6.) There have been, and may be, prophets. (7.) That Moses was the greatest prophet. (8.) That every syllable of the law was given to Moses by inspiration, and that the traditionary expositions of the precepts were entirely a divine revelation given to Moses. (9.) That the law is immutable. (10.) That God knows and governs all our actions. (11.) That he rewards the observance, and punishes the violation, of his laws. (12.) That the Messiah will appear, but that his coming is delayed. (13.) That God will raise the dead, and judge all mankind.

The Jewish state and government hath undergone divers changes and mutations. It was, (1.) Patriarchal, when the fathers of their several families, and their first-born after them, exercised all kind of government, ecclesiastical and civil, being both priests and kings in their own houses. They had power over their own families, to bless, curse, cast out, disinherit, and to punish with death, as is apparent from the book of Genesis. After this prerogative of primogeniture ceased, there ensued, (2.) A sort of dictatorial government ; or that under Moses, Joshua, and the Judges. But during the times of the Judges, there were very often long intervals and vacancies between the death of one, and the election of another judge ; in all which the state of government depended on the administration of the great court of the seventy elders, called the Sanhedrim ;

Sanhedrim; first instituted Numb. xi. 16. in respect of whom the government may be said to have been aristocratical. To this succeeded, (3.) A monarchical state, or that of kings; which began in Saul, and continued in Judah and Israel till the captivity of each, which was about 520 years. (4.) From the captivity to the advent of Christ their state was various, and confused: as first, they were under Aichmalotarchs, or heads of the captivity; from Zerubbabel to John Hircanus, fifteen inclusive, all of the posterity of David. Secondly, from thence the sovereign authority departed from the house of David, to the Maccabees, or Assimonian princes; beginning in Matathias Maccabeus, and ending in John Hircanus, five inclusive, all of the lineage of Levi. Lastly, They came again under the regal state, being governed by twelve kings; the first of which was Aristobulus, and the last Agrippa junior, the last of the line of Herod the Great. In him the kingdom of the Jews expired, and not long after, their city and temple were destroyed, and themselves dispersed over the face of the whole earth, for their heinous sin in rejecting and crucifying the Lord of life and glory.

Monarchical.

Captivated state.

Aichmalotarchs.

Maccabees, or Assimonian princes.

Regal state again.

There seems plainly to have been a twofold court of judicature amongst the Jews; the first ecclesiastical, appointed and held to judge and determine affairs and matters relating to church discipline: the second, a civil judicatory, concerned in the affairs of the common-wealth. The first was called a synagogue, the other a council: as Matt. x. 27. The spiritual court consisted of Levites, priests, and the chief fathers of Israel, as 2 Chron. xix. 8. and in causes spiritual for the Lord, the high-priest, or archbishop, was chief. The civil courts of justice were made up of secular judges, and various officers, of which more by and by.

The office of the ecclesiastical court was to determine appeals in all controversies of difficulty; but chiefly, as a representative church, to censure and excommunicate offenders against the orders and laws of church discipline. Of excommunication there were three degrees. (1.) The first is called Nidui, i. e. a separation, or putting away; a casting out of the synagogue, John ix. 22. Such an one was not to

The censures of the ecclesiastical court.

Excommunication of three kinds.

Nidui, or approach separation.

Cherem or
anathema.

Shammatha or
maranatha.

The Jewish
Sanhedrim
twofold.

The great
sanhedrim.

Gazith.

Nasi.

Abh Beth Din.
Chacham.

Their power.

The lesser san-
hedrim.

approach within seven feet of any man or woman, to eat, drink, wash, shave, &c. It was of thirty days continuance, but might be shortened by repentance. (2.) The next degree of excommunication was called Cherem by the Jews, but Anathema by the Greeks; and was a solemn devoting or delivering an heinous offender over to Satan, with direful curses, out of Deut. xxviii. and elsewhere. This was called excision, or a being cut off from the people. (3.) The third and heaviest degree of excommunication was Shammatha, or, in Syriac, Maranatha; this was joined with an execration, by which a person was rendered execrable before God and man, and destined to divine vengeance. See 1 Cor. xvi. 22. 2 Tim. iv. 14. and Judges v.

The civil courts of judicature were two, the great and lesser Sanhedrim: the great Sanhedrim, or supreme senate, consisted of seventy-one judges, answering to Moses and the seventy elders mentioned Numb. xi. They were elected indifferently out of the chief priests, scribes, and elders of the people. Their qualifications were piety and general learning, men of gravity, and fathers of children, that they might be tender. The place where they sat was called Gazith, or council chamber, in the temple. Their way of sitting was thus; the most considerable for wisdom and reputation was placed uppermost in the middle, representing Moses, and was called Nasi, prince or president. The next for worth sat at his right hand, and was called Abh Beth Din, father of the council, or vice-president: On the left hand sat the Chacham, or wise man; and then the rest of the Sanhedrim sat part on the right, part on the left, in a semicircular form. Their power extended to all persons and causes, to a whole tribe, a prophet, an high-priest, or even the king himself.

The lesser Sanhedrim, or Beth Din, was of two sorts; the first consisted of twenty-three aldermen, and the other was a triumvirate of three aldermen only. These inferior courts sat in the gates of all the common cities of the land. The power of the triumvirate extended only to petty matters, a whipping, pecuniary mulcts, &c. That of the twenty-three extended to capital cases, and sat (but with a restrained power)

power) on life and death. From these lower courts appeals were made to the high court, from whence there was no appeal.

The punishments of the Jews were of two sorts, capital, and not capital. The capital punishments were four; (1.) Lapidation, or stoning to death. (2.) Ustion, or burning; though the person burnt was always first strangled. (3.) Decollation, or a beheading of the person. (4.) Strangulation, a choaking a person by a string tied about his neck. The other penalties were, (1.) Imprisonment. (2.) Restitution. (3.) Retaliation. (4.) Banishment to the cities of refuge, which were six, besides the forty cities of Levites, which were also in some measure asylums or sanctuaries for felons to fly to for safety.

Of Jewish money, there is, (1.) The gerah; in value five farthings. (2.) The bekah; one shilling, three half-pence. (3.) The shekel; two shillings and three pence farthing. (4.) The mina, six pounds sixteen shillings and ten pence half-penny. (5.) Talent of silver; worth 342 pounds three shillings and nine pence. (6.) Talent of gold; worth 5475 pounds. (7.) They had also a golden shekel, worth one pound sixteen shillings and six-pence.

The Jewish dry measures were, (1.) Gachal, one tenth of a pint. (2.) Cab, almost three pints. (3.) Omer, about five pints. (4.) Seah, one peck and one pint. (5.) Ephah, three pecks and three pints. (6.) Lethech, about four bushels; and, (7.) The homer or choron, about 5 bushels and a pint.

The Jewish liquid measures were, (1.) Caph, a little above half a pint. (2.) Log, three quarters of a pint. (3.) Cab, about three pints. (4.) An hin, about one gallon and two pints. (5.) Seah, two gallons four pints and an half. (6.) Bath or ephah, about seven gallons and an half. (7.) Coron or chomer, about seventy-five gallons, five pints and an half.

The Jewish measures of length were, (1.) The palm, about three inches and an half. (2.) Span, near eleven inches. (3.) Cubit, one foot and ten inches nearly. (4.) Fathom, seven feet three inches and an half. (5.) Ezekiel's reed, eleven feet, very nearly.

nearly. (6.) Measuring line, 145 feet and eleven inches. (7.) Stadium, 145 paces and four feet and an half. (8.) Sabbath day's journey, 729 paces and an half. (9.) A day's journey, thirty-three miles and 172 paces.

Jewish months
and years.

The Jewish months were, (1.) Abib or Nisan. (2.) Zif or Jair. (3.) Sivan. (4.) Thamuz. (5.) Ab. (6.) Elul. (7.) Ethanim or Tizri. (8.) Bul or Marchesuan. (9.) Chiften. (10.) Tebeth. (11.) Shebeth. (12.) Ader. And sometimes a month was intercalated, called Ve-Ader. As the months stand here, they make the Jews ecclesiastical year. But their civil year began on the seventh month, Tizri. The first month, Abib, answered to part of March and part of April; and so on of the rest. The first, second, third, and fourth watches of the night, began at six, nine, twelve, and three o'clock, from evening to morning respectively.

Ecclesiastical
and civil.

Watches.

OF MAHOMETANISM, or the LIFE, RELIGION, and POLITY of MAHOMET and his Followers.

MAHOMET (or, according to the true pronunciation, Mohammed,) was born at Mecca, a city of Arabia; he was of the tribe of the Koraishtes, which was reckoned the noblest in all that country, and was descended, in a direct line of primogeniture, from Pher Koraisht, the first founder of it. His father's name was Abdollah, and the name of his mother Amena. His birth was in the month of May, in the year of Christ 571. Mahomet's birth.

Though he was of so noble a descent, yet in the beginning of his life he was in a very poor and despicable condition. For his father dying before he was two years old, all the power and wealth of his family devolved to his uncles, especially to Abu Taleb, who afterwards bore the chief sway in Mecca, and by whose protection he afterwards broached his imposture, and was supported against all opposers. Mean at the beginning.

He lived with his mother till he was eight years of age, when she dying, his grandfather took him; but he also dying in a year after, Mahomet was committed to the care of his aforesaid uncle Abu Taleb, who being a very great merchant, brought his nephew up in the affairs of merchandise, and sent him with his camels to Syria. How he came to rise.

But while he attended his uncle's factors in the public market-place at Bosra, Mahometan authors say, that a learned monk there perceived a kind of lustre shining upon his face, and from thence conjectured, and began to predict, that Mahomet should be a prophet: but this is a gross fiction, he not being acquainted with that monk till many years after. A fictitious prediction concerning him.

He continued with his uncle till twenty-five years of age, when one of the chief men of the city dying, he left his stock, which was very considerable, to his widow Cadigha, who invited Mahomet to be her factor, He marries his wife Cadigha, and becomes great

and married him in the twenty-eighth year of his age. By this means being equal in wealth to the greatest man in the city, his ambition made him aspire to the sovereignty which his ancestors had enjoyed, and of which he himself had been only deprived by being left an orphan.

Follows mer-
chandise.

His trading into Egypt, Palestine, and Syria, made him well acquainted both with Christians and Jews; and perceiving that each of them were divided into several sects, he concluded nothing would be more likely to raise him a party, and aggrandize him, than the advancing of a new religion.

Projects the
scheme of a
new religion.

And for such a change he judged the citizens of Mecca might be well disposed, because their traffic and frequent converse with the Christians had taken them very much off from their gross idolatry, which they had hitherto been addicted to: but at this time were fallen from Heathenism into Zendicism, an error near a-kin to Sadducism among the Jews; as denying providence, the resurrection, and a future state.

Zendicism,
what.

He draws up
a scheme of
his imposture.

He therefore betook himself to frame such a religion as might best go down with them, and so drew up a scheme of that imposture he afterwards deluded them with, which being a medley of Judaism, the heresies of the eastern Christians, and the old Pagan rites of the Arabs, with an indulgence to all sensual delights, it did too well answer his design, in drawing men of all sorts to the embracing of it.

He previously
leads an ere-
mitical life.

But that he might not immediately turn preacher against that idolatry which he had practised with others, and set up for a reformer, and take upon him the character of a prophet, (since he was known to lead an ill life) without some previous change; in the thirty-eighth year of his age he began to affect an eremitical life, and withdrew every morning to a solitary cave near the city, where he pretended to spend his time in fasting, prayer, and meditation: and there it is supposed he had his consults with those who helped him to frame his Alcoran.

He declares
himself pro-
phet, and first
attempts to
proselyte his
wife.

His first attempt was to draw his wife into a belief of his imposture; and in order to this, when he returned at night from the cave, he used to tell her of visions that he had seen, and strange voices which he had heard, in his retirement. But when she rejected these

these stories as his own vain fancies, or else delusions of the devil, he farther pretended a converse with the angel Gabriel; which she being as backward to believe as the other, he was obliged to suborn a fugitive monk (he kept then in his house) to practise with her, who accordingly did so, and at last he brought her to be persuaded of the truth of all her husband told her; and also that he really was called to the prophetic office; and thus she became his first proselyte in this imposture.

Having thus lived retired two years, he had gained, as he thought, a sufficient reputation of sanctity for his design, and in the fortieth year of his age, he began to take on himself the title of the apostle of God, and began to propagate his delusions, but privately for the first four years, and only among such as he had most confidence in.

He propagates his delusions privately.

His first proselyte was Cadigha his wife (as has been said) his second was his slave Zayd Ebu Hareth, and the third his cousin Ali, son of his uncle Abu Taleb. He tempted his servant Zayd, by promising him his freedom, and upon his receiving his religion, he accordingly manumitted him. And from hence it became a law among the Mahometans ever since, to make their slaves free, whenever they receive their religion.

His first proselytes.

Besides these, he having proselyted eight or nine more of the principal men of the city, began openly to publish his imposture to the people of Mecca, in the forty-fourth year of his age; and publickly declared himself to be a prophet sent from God, to reduce them from the error of Paganism, and to teach them the true religion.

Begins to propagate his imposture openly

He said, his religion was not a new one, but that old one which God first gave to Adam; and when lost in the corruption of the old world, restored it again by revelation to Abraham, who taught it his son Ismael their fore-father; and that he, when he first planted himself in Arabia, instructed men in the same religion which he had received from Abraham. But their posterity afterwards corrupted it into idolatry, and therefore God had now sent him to destroy this idolatry, and again to restore the religion of their patriarch Ismael. Therefore, according to his own account, the Jews do not improperly call his pretended religion Ismaelism,

His crafty way of insinuating the same.

He pretends
revelations
from God by
the angel Ga-
briel.

His chief ar-
guments to se-
duce men.

His paradise,
or heaven de-
scribed.

His hell, or
punishments
he threatened.

He threatens
temporal
judgments to
the disobedi-
ent.

He pretended to receive all his revelations from the angel Gabriel, and that he was sent on purpose from God to deliver them unto him. And whereas he was subject to the falling-sickness, whenever the fit was upon him, he said it was a trance, and that then the said angel Gabriel was come from God, with some new revelations to him, the splendor of whose appearance he could not bear, and so was the cause of those trances.

The main arguments, by which he deluded men into his imposture, were his promises and threats, as being those which easiest work on the affections of the vulgar.

His promises were chiefly of a sensual paradise, which he so cunningly framed as to make it consist and abound with all those pleasures and delights, which were most desirable, and best suited the gust of the Arabians; such as women ever young and most beautiful; pleasant rivers and streams of water, cooling drinks, shaded gardens, delicious fruits, with an eternal enjoyment of all other pleasures that enamour and transport the senses.

And with the same kind of subtlety he formed the notion of hell, consisting of such punishments as appeared to them most afflicting and grievous to be borne; and which he threatened to all who would not believe in him. And such torments were, drinking nothing but boiling and stinking water; breathing nothing but exceeding hot and scorching air; dwelling for ever in continual fire, and surrounded with black, hot and salt smoak, as with a coverlid; that they should eat nothing but briars and thorns, and the fruit of the tree Zacon, which should be in their bellies like burning pitch, and such like things. Now such an heaven or hell, as is here described, could not fail of alluring and terrifying an ignorant, sensual people, living in the hot or torrid zone.

To these motives he added (that nothing might be wanting) the threats of grievous punishments and judgments in this life, as well as in the future, if they would not hearken to him: and to this end set forth to them on all occasions, what terrible destructions had fallen upon the heads of such as would not be instructed by the prophets sent before: how the old world was deluged, Sodom destroyed by fire, the Egyptians plagued and drowned, for contempt and disobedience to Noah, Lot and Moses: and how Ad and Thamod,

two ancient tribes of the Arabians, (as he on purpose feigned) were totally extirpated for the same reason.

But that which gravelled him most was, that his opposers demanded to see a miracle from him: for, said they, Moses, Jesus, and the other prophets, by your own confession, worked miracles to prove their mission from God; and therefore if thou art a prophet, and greater than they, as thou boastest thyself to be, do thou work the like miracles to manifest it to us: raise the dead, cause the dumb to speak, the deaf to hear, &c. This objection he endeavoured to answer or to evade divers ways; but his most considerable reply was, that their predecessors had contemned the miracles of Saleh, and the other prophets, and that for this reason God would work no more among them. But none of his reasons being satisfactory, many of his followers departed from him. And therefore finding his sophistry too weak, he retiring to Medina, another city of Arabia, took the sword in hand, and having gotten an army to back his cause, began to sing another note. For then he pretended, that since God had sent Moses and Jesus with miracles, and yet men would not be obedient to their word, he had now sent him, in the last place, without miracles, to force them by the power of the sword to do his will. And pursuant thereto he forbade his disciples to enter into any farther disputes about his religion, commanded them to destroy all who opposed it, promised them great rewards for it in heaven, and that those who died in the cause should have a crown of martyrdom.

However, 'tis not to be denied but there are legends which ascribe abundance of miracles to him: as (1.) That he did cleave the moon in two. (2.) That trees went forth to meet him. (3.) That water flowed from between his fingers. (4.) That the stones saluted him. (5.) That he fed a great company with a little food. (6.) That a beam groaned at him. (7.) That a camel complained to him. (8.) That a shoulder of mutton told him of its being poisoned; and several others too ridiculous for Mahomet himself, or his doctors to own; who renounce them all, and acknowledge that he did not work any miracles; but alledge, that the eloquence of the Alcoran, and the excellency of its doctrine, is instead of all miracles,

He is gravelled with the objection of his inability to work miracles.

He retiring to Medina, takes the sword, which he says must suffice instead of miracles.

False miracles ascribed to him.

Instead of miracles he alledges the Alcoran.

The accomplices of the impostor in contriving the Alcoran.

since it was composed by a man who could neither write nor read.

But in answer to this, the Christian doctors (though they grant the Alcoran is the standard of Arabic eloquence and elegance of language, yet) prove that Abdia Ben Salon, a Persian Jew, was the chief assistant to Mahomet in composing the Alcoran; for having been a rabbi himself, he very well understood the Jewish religion and learning, and wrote all his pretended revelations for him for the ten first years, and therefore no doubt he was a principal contriver in the forging of them. He was likewise assisted by a Christian monk, one Sergius, (in Arabic, Bahira) a Nestorian, in what relates to Christianity; who being excommunicated and expelled his monastery for a great crime, for shame retired to Mecca, and was entertained by Mahomet as before said. For the heathenish rites of the Arabs, Mahomet understood them well enough himself: but the story of his teaching a bull to bring him the Alcoran on his horns, and breeding pigeons to come to his ears to make them believe it was the Holy Ghost, the Christian doctors now reject as fabulous.

In the twelfth year of his pretended mission is placed the Mesra, that is, his famous night-journey from Mecca to Jerusalem, and from thence to heaven; which was thus. At night being in bed with his wife Agefha, he heard a knocking at his door; whereon arising, he found there the angel Gabriel with seventy pair of wings expanded, whiter than snow, and clearer than crystal, and the beast Alborak standing by him, on which they say the prophets used to be carried from place to place, upon the execution of any divine command.

On the Alborak.

Mahomet describes this beast Alborak as white as milk, of a mixt nature and size, between an ass and a mule, and as swift as lightning, from whence it hath its name.

Gabriel the angel sent to conduct him.

Gabriel with a pleasant countenance in the name of God salutes Mahomet at the door, and tells him he was sent to bring him to God into heaven, where he should see strange mysteries, not lawful to be seen by any other, and bid him mount the Alborak. But the beast being wanton and skittish with idleness, (having rested from the time of Christ till now) would not stand still

He bribes the Alborak to stand still.

for

for Mahomet to stride him, till he had first soothed him by promising him a place in paradise: but by this means quietly mounting, the angel Gabriel leading the way with the bridle in his hand, he was conveyed from Mecca to Jerusalem in an instant of time.

On his arrival all the departed prophets and saints appeared at the gate of the temple and saluted him, and attending him into the chief oratory, desired him to pray for them, and then departed: whereupon, going out of the temple, they found a ladder of light ready fixed for them, which they ascended, leaving the Alborak there tied to a rock till their return.

His arrival at Jerusalem.

On their arrival at the first heaven, upon Gabriel's knocking at the gate, and informing the porter who was there, the gates, of prodigious largeness, immediately opened. This first heaven, he says, was all of pure silver, and that the stars hung from it by chains of gold, each being as big as mount Noho near Mecca. Also that here he saw a decrepid old man, who proved to be our first father Adam, who saluting him, gave God thanks for so great a son, and then commended himself to his prayers.

They arrive at the first heaven; what he saw there.

He tells us also he here saw a multitude of angels in all manner of shapes, viz. of men, beasts, and birds of all sorts; and among the latter he saw a cock, white as snow, of so prodigious a bigness, that his feet standing on the first heaven, his head reached up to the second, which was at the distance of five hundred years journey. Others say his head reached through all the seven heavens as far as the throne of God, which is above seven times higher.

His description of a wonderful cock.

This cock, say they, hath his wings all over decked with carbuncles and pearls, and extended east and west at a distance answerable to his height: that he is the chief angel of the cocks; and that every morning God singing an hymn, this cock constantly joined him by crowing, which is so loud, that all (except men and fairies) hear it in heaven and in earth, and then all other cocks which are in heaven and earth crow also. The Mahometans say, the voice of one constantly reading in the Alcoran, of him who early each morning prays for pardon of sins, and the voice of this cock, are three voices which God always hears. All this stuff about the cock arose from the fables of the Talmud.

Farther described.

From

They arrive at the second heaven; and what they saw there.

They arrive at the third heaven; and what they saw there.

They arrive at the fourth heaven; what they saw there.

They ascend to the fifth heaven.

To the sixth heaven.

To the seventh heaven; and what they saw there.

From the first heaven the impostor tells us he ascended to the second at the distance of five hundred years journey above it, (which was the distance of each of the seven above the other.) This heaven he says was of pure gold; here he saw Noah, who congratulated him, and recommended himself to his prayers. Here also he says he saw twice as many angels as before, and among them one who standing on the second, his head reached to the third heaven.

From thence he ascended to the third heaven, made of precious stones, where at the entrance he met Abraham, who desired the favour of his prayers. And here he saw many more angels than the former, and one of so prodigious a size, that the distance between his two eyes was seventy thousand days journey (according to our rate of travelling.) This the angel Gabriel told him was the angel of death; for before him was a large table, wherein he wrote the names of persons that are to be born, computes the days of their life, which when they have compleated he blots them out, and then those persons die.

From hence he ascended up to the fourth heaven, which was all of emerald; where at the entrance he met Joseph the son of Jacob, who desired a share in his prayers also. Here were still more angels than in the preceding heaven, one of which also reached from this to the fifth heaven, who was continually weeping and lamenting, which Gabriel told him was for the sins of men, and their destruction consequent thereupon.

From hence he ascended up to the fifth heaven, which was made of adamant, where he found Moses, who recommended himself to his prayers, and there also saw a much greater number of angels than in the former heaven.

From hence he ascended to the sixth heaven, which was of carbuncle, where he met with John the Baptist, who committed himself to his prayers also. Here likewise were more angels than in the former heaven.

From hence he ascended to the seventh heaven, which was all made of divine light; and here he found Jesus Christ, to whom (now) Mahomet recommends himself, and desired Christ to pray for him. By this he acknowledged Christ to be the greater, to flatter and please the Christians. Here he said he found a much greater

greater number of angels than in all the other heavens together; among which was one extraordinary angel having seventy thousand heads, and in every head so many tongues, and every tongue uttering so many distinct voices at once, with which he continued day and night incessantly praising God.

The angel Gabriel having brought him thus far, told him, that it was not permitted him to go any farther, and therefore directed him to ascend up the rest of the way to the throne of God by himself; which he performed with difficulty, passing through waters and snow, &c. till he came where he heard a voice saying to him, "O Mahomet, salute thy Creator;" from whence ascending higher, he came to a place of a vast extension of light, of such brightness as could not be endured, and this was the habitation of the Almighty, where his throne was placed; on the right side of which he says there were written these Arabic words, "La ellah elallah Mohammed Reful ollah," i. e. There is no God but God, and Mahomet is his prophet. This is the Mahometan creed, and which he says was written on all the gates of the seven heavens.

The angel Gabriel leaves him, and he ascends to the throne of God by himself.

The abode of God.

But approaching the presence of God within two bow-shots he says, he saw him sitting on his throne, with a covering of seventy thousand veils before his face: that God put forth his hand, as a token of his favour, and laid it upon him, which was of that exceeding coldness, that it pierced the very marrow of his back, and he could not bear it: that after this, God conversed familiarly with him, revealed to him a great many hidden mysteries, and made him understand his whole law; and gave him many things in charge concerning his instructing men in the knowledge of it; and in conclusion gave him several privileges above the rest of mankind. And then being dismissed, he returned to the angel Gabriel, who re-conducted him through all the seven heavens, and sat him on the Alborak, which he left tyed at Jerusalem, and from thence, with the bridle in his hand, conducted him to Mecca; and all this in the space of one tenth part of a night.

He is admitted to approach and converse with God.

He is dismissed, and re-conducted to Mecca.

His relating this extravagant and ridiculous fiction the next morning, exposed him to great derision and contempt; and many of his disciples, ashamed of him

The relation hereof exposes him to contempt.

as

as an abominable liar, left him in indignation. And many more had done so, had not Abu Beker, a partner in the cheat, put a stop to the defection, by his avouching and pretending to believe the truth of all Mahomet's jargon, stolen from talmudical fables.

They of Mecca conspire to cut him off.

He is informed of it, and flies to Medina.

The æra of the Hegira, or flight.

The impostor propagates his religion with the sword.

He recovering Mecca, makes the temple there the chief place of his worship.

The imposture being constantly attended with contentions, insurrections, and male-practices, which it occasioned in Mecca, and other cities of Arabia, the chiefs of Mecca resolved at last to strike at the root, and prevent the further spreading of the mischief by cutting him off, who was the author of it. But he having timely notice thereof, fled secretly by night with all that would follow him to Medina, another great city of Arabia; where he settled himself, and built a mosque for the exercise of his new religion: and ordered all computations of time to be made henceforwards from his said flight; which therefore was the beginning of the Mahometan æra, called Hegira, which (in Arabic) signifies, the flight. It commences from July the 16th, A. D. 622.

The impostor having now obtained a town at his command, where to arm his party, and head them with security; after preaching up his imposture for thirteen years, resolved now to take the sword in hand and fight for it: and henceforth forbids all manner of disputing about his religion; and makes it no less than death for any one to contradict and oppose what he taught; commanding all to be slain with the sword that would not embrace it.

But having, by the fortune of war, got footing again at Mecca, and perceiving that his followers still bore a superstitious veneration for the temple there, he thought it his interest to preserve their temple in its former honour of being the chief place of worship, and therefore ordered his disciples to pray with their faces towards Mecca, and ordained the temple there the chief place of worship, to which they were still to perform their pilgrimages, as in former times. And to magnify the temple, and give greater honour and reputation thereto, the impostor told them it was first built in heaven for the angels to worship in; that there Adam worshipped while in paradise, (which they say is in heaven,) but being cast down from thence, he prayed God that he might have such a temple in earth

as

as that was in heaven; and that thereupon God sent down the similitude of that temple in curtains of light, and pitched it at Mecca, where it now stands, which is, say they, exactly under the original in heaven; with much more of the like fabulous stuff.

In the seventh year of the Hegira, i. e. after his flight, he led up his army against Chaibar, an Arabian city, and entering the town, took up his quarters in the house of one Horeth, a principal inhabitant, whose daughter Zamath dressing a shoulder of mutton for his supper, poisoned it: for she said she would make a trial whether he were a prophet or no: if he were a prophet, he could certainly tell, said she, that the meat was poisoned, and so would receive no harm from it: if he were not a prophet, she thought she should do the world great service in ridding it of so cruel a tyrant, as she said. Now some say, the shoulder of mutton spoke to him, and told him it was poisoned. But alas! it seems it was too late to do him any good; for Basher, one of his company, eating greedily of it, fell down dead in the place; and though Mahomet had not immediately the same fate, because not liking the taste, he spit out again what he had taken into his mouth, yet he let down enough to do his business, for he was never well after this supper, and at three years end died of it in the city of Medina; he died on his birth-day, being just sixty-three years old, in their computation, which makes only sixty-one of our years. He was buried in the earth, and not suspended in an iron coffin, by means of loadstones, in the air, as has been fabulously reported.

He is poison'd at Chaibar, and dies in three years after.

His age and burial.

The Alcoran, or rather (as it should be called) the Coran, is the name of that book which contains the Mahometan laws and doctrines; and signifies, the reading, or that which ought to be read; as we call our Bible, the Scripture, or Writing. The Mahometan Bible, or Coran, is divided into four parts, and each of them into chapters, and those again into verses. The chapters have ridiculous titles, as the Chapter of the Cow, of the Elephant, of the Emmet, of the Spider, of the Fly, &c. And the whole is in such a disorderly and incoherent method, that it is but one continued hodge-podge. Yet have they such a stupid veneration for this book, that 'tis death for a Jew or Christian

An account of the Alcoran, or Mahometan Bible.

Some of the principal doctrines and tenets of the Mahometans.

Christian to touch, and even for a Mussulman himself, (for so they call their pretended true believers) if he touch it with unwashed hands. They pretend God sent it to the prophet Mahomet by the angel Gabriel writ on parchment made of the skin of the ram which Abraham offered in sacrifice instead of his son Isaac; with abundance of other superstitious and impious trumpery concerning it, not worth rehearsing.

The chief principles of Mahometanism are as follow; (1.) They believe that God is but one, as well in person as essence. (2.) That Mahomet is his prophet. (3.) That angels are God's ministers, which execute his commands; of whom the angel Gabriel is chief. (4.) They hold fate and absolute predestination, which makes them fight undauntedly. (5.) They hold an heaven and hell, with such rewards and punishments as have been just now described. (6.) They use circumcision, which they had from the Jews. (7.) Their religion is to be propagated by the power of the sword only, for which reason their Imans, or priests, preach with a drawn sword in their hands. (8.) That the Mussulmans who kill unbelievers, thereby merit paradise. (9.) Mahomet forbid drinking wine, games of chance, &c. lest his followers should thereby quarrel, fall together by the ears, and expose his religion to hazard. (10.) He allowed both the Old and New Testament, and cites many passages from each to prove and justify his pretended apostleship. (11.) They hold many things by oral tradition, which they pretend Mahomet received from the mouth of God in the night journey before related. (12.) The Mussulmans are allowed not only a plurality of wives, but to keep as many women slaves for their lust as they can afford to buy, and the children of the latter are as legitimate as those of the former: the old lecher, Mahomet himself, having had fifteen or twenty wives for his own share. (13.) Mahomet forbid adultery to his followers, yet himself took the wife of his servant Zayd. (14.) If two places of the Coran disagree or be contradictory, they revoke one of them, or disannul it. (15.) They hold the immortality of the soul. (16.) That the punishments of the wicked are not eternal. (17.) That the very devils themselves shall at last be converted by the power of the Coran. These, with innumerable other

other silly, false, and ridiculous tenets and traditions, make the monstrous bulk of Mahometan doctrines, which 'tis amazing to think how even superstition itself could swallow. A religion bespeaking only an illiterate barbarian, who could neither write nor read, for its author; fabulous Jews, idolatrous Pagans, and heretical popish Christians for its votaries; and the sword and destruction for the means of its propagation.

The notes and characters inseparable from an imposture are reckoned by a learned man as follow: (1.) That it must always have for its end some carnal interest. (2.) That it can have none but wicked men for its authors. (3.) That both these must necessarily appear in the very contexture of the imposture itself. (4.) That it can never be so framed, but that it will contain some palpable falsities, which will discover the falsity of all the rest. (5.) That where-ever it is first propagated, it must be done by craft and fraud. (6.) That when entrusted with many conspirators, it can never be long concealed. And, (7.) That it can never be established without force and violence.

The notes or marks of an imposture from dean Prideaux,

Now that all these must belong to every imposture, and all particularly did so to Mahometanism; and that none of them can be charged upon Christianity, the aforesaid learned dean hath largely proved in his letter to the deists of the present age.



Of PAGANISM; or the DIVINITIES of the HEATHEN, and the Worship paid to them.

The true original of idolatry and Heathen superstitions plainly accounted for.
Rom. i.

ALTHOUGH the great and awful Creator of all things had most legibly imprinted the character of Deity on all the wonderful works of his hands; and that thereby the invisible things of him from the creation of the world are clearly seen, being understood by the things that are made, viz. his eternal power and godhead or deity; and in so clear a manner, that they who acknowledged it not must needs be without excuse; yet that when men thus infallibly knew God, they neither glorified him as God, nor were thankful to him for his constant blessings, but instead of this became brutishly supine and vain in their imaginations, and their hearts, through such wretched folly, were envelop'd in ignorance, and darkened like the earth eclipsed from the splendour of the sun; and so perverse, that they seemed even not to like to retain God in their knowledge: I say, that then God did judicially give them up to a reprobate mind; in consequence of which they soon changed the glory of the uncorruptible God into an image of corruptible man, and of birds and four-footed beasts, and reptiles; and thus changing the true worship of God into lying and diabolical delusions, they worshipped and served the creature more than the Creator, who is over all, God, blessed for ever, amen. And this is the true original of all that gross darkness and idolatrous superstition which had overwhelmed the world, and introduced such a numberless variety of false and fabulous deities in the beginning.

Polytheism,
what.

Idolatry, what

The religion (or rather the impiety) of the Pagans or Heathen nations, is properly called polytheism, or the acknowledging a plurality of Gods; for their number was almost infinite. It is also called idolatry, because they worshipped their divinities by various representations, called idols or images.

'Tis

'Tis generally agreed, that Ninus, the first Assyrian monarch, was the first contriver and assertor of false gods; who, to render the name and memory of his father Belus or Nimrod immortal, procured a statue of him to be curiously made, and paid divine honour and reverence thereto, and commanded the Babylonians, his subjects, to do the same: and to induce them the easier, he made it a sanctuary for the guilty and miserable to fly to, and be safe.

Ninus, the first author of idolatry.

This statue, or idol of Ninus, which represented his father Belus, was in time called Bel, and afterwards Baal: and this being a general name for lords and rulers, it imports among the heathen the same as the sacred names of Jehovah and Adonai in the scriptures, i. e. sovereign lord; at length this appellation was changed among the Greeks for that of Jupiter or Jove. So that Jehovah, Baal, and Jupiter, all signify the same thing, only the first is sacred and truly applied; the other prophane, and wrongly applied to idols.

The first false deity, Bel, or Baal, or Jupiter.

If then Ninus was the first idolater, and Bel or Baal the first idol, 'tis evident the Babylonians and Assyrians were the first people and nation who fell off from the worship of the true God to idolatry and polytheism; from whence the dire contagion soon spread over the neighbouring nations, and totally infected the Phœnicians, Egyptians, Ethiopians, Syrians, Persians, Grecians, Indians, &c. far and near, who have ever since been prone and strenuously addicted to these kinds of superstitions.

Babylonians and Assyrians the first idolaters.

The nations of the world having thus lost the knowledge of the true God, and abandoned themselves to follow the uncertain conduct of their confounded reason, and the wild vagaries of minds and judgments judicially blinded, they quickly shewed their depraved natures in the ridiculous and senseless choice they made of their gods and divinities; and the strange deficiency of their reason in the confused and endless variety of them: there being nothing in the heavens or the earth, whether good or bad, that men could see or be sensible of, but that some people or another had surely deified it.

Every thing in time became deified.

But to be more particular, the species of idolatry may be reckoned as follow, (1.) The worship of angels, and spirits, or pure and abstracted intelligences, whom they made to preside over kingdoms and people,

The several species of idolatry.

First species.

OF PAGANISM.

- and in scripture they are called Elohim or gods, strange gods, other gods, the gods of the heathen, &c. of which see Exod. xviii. 11. xxii. 19. 2 Kings xvii. 7.
- Second species** (2.) The worship of the heavenly bodies, the sun, moon, and stars; this in scripture is called worshipping the host of heaven; they imagining great virtue and benign influences to be derived from them to the earth and all things on it. (3.) The worship of idols or images of various forms and shapes, as of men, beasts, birds, fishes, &c. and this of all others is most universal, and what is most properly called idolatry. (4.) The worship of animals themselves: as lions, horses, oxen, sheep, swine, goats, dogs, cats, mice, spiders, &c. amongst beasts: the eagle, ibis, phoenix, hawks, &c. among birds; and the whale and other fishes; with the serpents of all kinds; and shell-animals; as may be seen in history. (5.) The worship of inanimate things; as fire, water, air, the winds, the earth; also all kinds of plants and herbs, stones, &c. (6.) They also worshipped things which were not substances, but mere modes and accidents of things; as life, death, passions of love, fear, envy, anger, &c. Diseases, as the fever; also health, honour, &c. The virtues, as virtue, faith, hope, justice, piety, mercy, chastity, &c. Also truth, the mind, peace, money, mirth; yea impudence, calumny, fraud, fury, discord, fame, fortune, silence, &c. were all esteemed deities, and had temples built for their worship. (7.) Another kind of idolatry is the paying divine honours to kings, heroes, &c. who have fought battles successfully, and done many great exploits; supposing such great persons have somewhat in them more than human; therefore make their images, and bow down to them as demi-gods. Thus the emperors of Persia, India, and China, are worshipped at this day. (8.) The last, and most strange kind of idolatry, is the worshipping of devils, and evil spirits, which are called Caco-dæmons; for they say, God is good and will not hurt them, therefore they need not pray to him on that account; but, say they, the devil and wicked spirits in the air, as they are inclined, and have a power to do mischief, so they undoubtedly will, if they do not honour them with their prayers and sacrifices, not to do it. And such diabolical adorations are very frequent at this day in the Indies and other parts of the heathen world.
- Third species.**
- Fourth species**
- Fifth species.**
- Sixth species.**
- Seventh species.**
- Eighth species**

The

The most convenient division of the gods and goddesses of the heathen is according to their several degrees of dignity and superiority allowed them; of which we have the following classes. (1.) The celestial gods and goddesses. (2.) The terrestrial deities. (3.) The marine and river gods. (4.) The infernal gods. (5.) The subordinate and miscellaneous deities. (6.) The adscriptitious gods, demi-gods, and heroes. (7.) Modal deities. Of which a few things in order.

The celestial or superior gods are these five, viz. Jupiter, Apollo, Mars, Mercury, and Bacchus. The celestial goddesses are these five, viz. Juno, Minerva or Pallas, Venus, Latona, and Aurora.

Jupiter, the most high of all the Heathen divinities, is said to be the son of Saturn and Ops; was born at the same birth with his wife Juno, and educated in mount Ida in Crete, because his father Saturn sought to devour him: but being grown, he deposed and banished his father, and divided the kingdom of the world between himself and his brethren Pluto and Neptune. The jurisdiction of the sea he gave to Neptune; Pluto was sent to rule in hell; but reserved to himself the sovereignty of heaven and earth. He was esteemed the most beneficent deity, and was therefore called the father of the gods and men. He overcame the giants and the Titans in battle; with other great exploits recorded of him. He committed abundance of incest, adultery, and lewdness of all kinds, in various shapes. (A fine character of a god!) Almost every nation had its Jupiter: Varro reckoned three hundred Jupiters, as a part of the thirty thousand gods owned by the Heathen. In the Pantheon he sits upon a throne of ivory and gold, under a rich canopy, with a beard, holding thunderbolts in his right-hand, and a scepter of cypress in his left, with an eagle on the top; is invested with an embroidered cloak, and golden shoes.

Apollo was the next principal deity of the first rank: he was the son of Jupiter and Latona; born in the island Delos, and at the same birth with Diana. He was the God whom they made to preside over music, physic, poetry, and prophecy, or divination, as also the chase. He was always represented as a young and beardless youth. He killed the serpent Python, and afterwards the Cyclops; he slew Marsyas the fiddler

alive for challenging him at music; with Neptune's help he built the walls of Troy for king Laomedon: being degraded, he kept Admetus the king of Thesfaly's cattle. He turned Daphne, whom he loved, into a laurel; and his boy Hyacinth into a violet. He had a famous temple and oracle at Delphos. He was also called Phœbus, Sol, Horus, &c. His image was a graceful and comely youth, with long hair, a laurel-crown, garments embroidered with gold, holding a bow and arrow in one hand, and an harp in the other.

Mars.

Mars is the next celestial divinity with the Heathen; son of Jupiter and Juno, or, as Ovid says, of Juno alone; who conceived him at the smell of a flower, shewed her by the goddess Flora. He was reputed the god of war and armies, as his sister Bellona was the goddess thereof. He lay with Venus, the wife of Vulcan, who at last contrived to catch them together in an iron net, as he accordingly did, and thus exposed them naked to the laughter and diversion of the gods. He was represented riding in an high chariot, drawn by two furious horses called Fear and Terror, driven by his sister Bellona; he was covered with armour, and holds a spear in one hand, and brandishes a sword in the other, as though he breathed fire and death, and threatened every body with ruin and destruction.

Mercury.

Mercury was the son of Jupiter and Maia; he was reputed the god of eloquence and merchandise; he was supposed the messenger and interpreter of the gods; and therefore he had wings on his head and heels; and a caduceus in his hand, which is a rod with two serpents twisted round it, in token of peace and amity. He was also looked upon as the god of thieves, and the arbiter of peace. He guarded the ways and conducted the deceased souls to hell. The Egyptians called him Anubis. The inventions of the lute, the harp, the exercise of wrestling, &c. are ascribed to him. And 'tis probably thought the famous Trismegistus in ancient times was the original of this deity.

Bacchus.

Bacchus was the god they most delighted in, though he was their greatest shame. He was the son of Jupiter by Semele; he was looked upon as the god of wine and drunkenness, and revelling. He was crowned with ivy and vine-leaves, held a javelin encircled with the

the same, rode on a chariot drawn sometimes by lions and tigers, sometimes by lynxes and panthers; preceded by a drunken band of satyrs, demons, nymphs, &c. Silenus, his foster-father, often comes after him, sitting on an ass that bends under his burthen. He was represented naked, with a red face, lascivious looks, in an effeminate posture, dispirited with luxury, and overcome with wine.

Of the celestial goddesses, Juno is allowed the pre-eminence. She was daughter of Saturn and Ops or Cybele; and sister and wife to Jupiter. She was esteemed the goddess of kingdoms and riches, and known by a great diversity of names; and as most other gods were referred to Jupiter, so almost all other goddesses were incorporated in the person of Juno. She was represented as a majestic beautiful woman, riding in a golden chariot, drawn by peacocks, wearing a scepter in her hand, and a crown on her head set about with roses and lillies, and encircled around with fair iris or the rainbow. She was also judged to preside over matrimony, child-bearing, births, and was the guardian angel of women; and therefore had many temples and altars erected in honour of her.

Minerva or Pallas, was (as 'tis said) born of Jupiter's brain without a mother; she was the goddess of wisdom, and all arts; she invented spinning, weaving, the use of oil, making and colouring cloth, building; she refused to marry any of the gods, and led a virgin life: her statue was of a stern and fierce countenance, cloathed with armour, (as being the president and inventress of war) a glittering head-piece of gold, a golden breast-plate, a lance in her right-hand, and a terrible shield (with the head of Medusa) in her left. A fighting cock stood by her; and an owl, as an emblem of sagacity, because it seeth in the dark. There were also many Minerva's as well as Jove's and Juno's.

Venus was the goddess of love and beauty; she sprang from the froth of the sea arising from the secrets of Coelus, which were cut off and thrown therein: as soon as born, she was driven upon the island Cyprus, where she was educated, and afterwards being carried to heaven, was married to Vulcan, whom she soon cuckolded, with her gallant Mars. Her image was most fair and beautiful, viewed itself with a soft and

becoming pride; was cloathed with a purple mantle, glittering with diamonds, with two Cupids at her side, the Graces round her, with the charming Adonis holding up her train. Her chariot was of ivory, drawn by swans, doves, or swallows, as she directed.

Latona.

Latona was the daughter of Phœbe and Cœus the Titan, the wife of Jupiter, and mother of Apollo and Diana. She brought forth her twins in the isle Delos, which before was said to swim in the sea, but by Neptune's order became fixed and immoveable for Latona's purpose. Whilst she was big and wandering through the fields of Lycia, being very thirsty, she attempted to drink of a spring at the bottom of a valley, but the country rustics hindered her, and bid her depart; she entreated, they obstinately refused to admit it; whereupon in a wrath she cursing them, said, May ye always live in this water! Immediately they were turned into frogs, and leaped into the muddy water, where they have ever after lived.

Aurora.

Aurora was the daughter of Terra and Titan, the sister of Sol and Luna, and mother of the stars and the winds. She was the goddess of the morning. She was represented standing in a chariot of shining gold, drawn by two white flying horses; her countenance shone like gold, her fingers red like roses; crowned with a star, radiating beams of light and glory all around her; in one hand she held the reins, in the other a burning flambeaux. Such are the fables and poetical fictions concerning the celestial deities.

The terrestrial gods and goddesses.

The terrestrial deities (so called because their habitations are in the earth,) are Saturn, Janus, Vulcan, Æolus, and Momus. The terrestrial goddesses are principally Vesta, Cybele, Ceres, the Muses, and Themis with her sisters. To these terrestrial gods there are also some peculiar to the countries and the woods, and are therefore called the gods of the woods, which will be afterwards described.

Saturn.

Saturn, the son of Cœlum and Terra; he married his sister Ops; his eldest brother was Titan; and his children, Jupiter, Neptune, Pluto, and their sister Juno. Titan, by the persuasion of his mother Ops, and sister Cybele, resigned his right to the kingdom of the world to his brother Saturn, on condition that he should not suffer any of his male children to live; that the

the empire of the world might devolve to his posterity after Saturn's death. Whereupon Saturn is said to have devoured all his male children. But his wife Ops saved Jupiter, by sending him away, as also Neptune and Pluto; which when Titan afterwards came to hear of, he made war upon Saturn, and put him and his wife in prison. At length Jupiter overcame Titan, and set them free: but Saturn being informed his son Jupiter would deprive him of his kingdom, endeavoured to make him away; which when Jupiter understood, he banished his father, and took on him the sovereignty of the world. In his days was the golden age. He was represented as a decrepit deformed old man, in whose left hand was a scythe, (which he said was to invent) and in his right a serpent biting his tail. The whole of which is a proper emblem of time.

Janus is said to be the son of Cœlus and Hecate; Janus. he was esteemed to preside over the beginning of all business. He was represented with two faces looking both ways at once. He sits upon a throne before twelve altars, as being the first institutor of altars, temples, and religious rites. He holds a key in one hand, and a rod in the other, as he was the guardian of the ways, and the inventor of locks, doors and gates. From him the month of January took its name, as it stands between the old and new years, and beholds them both as it were with two faces.

Vulcan was the son of Jupiter and Juno, and yet Vulcan. notwithstanding his descent was so high, and himself a god, he was obliged to follow a trade, and that of a blacksmith too, poor God! For being contemptible on account of his deformity, he was cast down from heaven into the isle of Lemnos; he broke his leg with the fall, and has ever since been lame. Here he erected his forge, and made thunderbolts for his father Jupiter, and armoury for the other gods. His servants were called Cyclops, because they had but one eye, which Cyclops. was in the middle of their foreheads, of a circular figure. Their names were Brontes, Steropes, and Pyracmon, and were born of Neptune and Amphitrite. Though Vulcan was so nasty and deformed, he had the greatest beauty among all the divinities to his wife, viz. the goddess Venus, who indeed cuckolded him, but that was no wonder. Vulcan, in short, was the god

of fire, and presided over metals, and artificers concerned therewith.

Æolus.

Æolus was the son of Jupiter and *Acesta*, or *Sagesta*; he was the god of winds, which he kept under his power confined in a cave in one of the *Æolian* islands where he dwelt; who therefore could set them at liberty, raise storms and hurricanes, or otherwise could restrain their rage, and cause perfect calms by recalling the winds, and fettering them in their prisons.

Momus.

Momus, the son of *Nox* and *Somnus*; he was (as his name imports) a jester, mocker, or mimick; his life was idly spent in nicely observing the sayings and actions of the gods; and then in censuring and deriding them, with the greatest freedom. For instance, when *Neptune* had made a bull, *Minerva* an house, and *Vulcan* a man, they made *Momus* judge who had shewn the greatest skill; but he blamed them all: *Neptune*, for not placing the bull's horns in his forehead before his eyes, that he might have pushed the surer: and *Minerva*, because her house was fixed, and could not be carried away in case it was placed among bad neighbours: but *Vulcan* he said was most imprudent, because he did not make a window in the man's breast, whereby to view his subtle and designing thoughts.

The terrestrial
goddesses.
Vesta.

The terrestrial goddesses are, (1.) *Vesta*, the wife of *Cœlum*, and mother of *Saturn*; (for *Ops*, *Vesta*, and *Terra*, are all one goddesses.) She was the goddess of nature; in her temple was a perpetual fire, attended and kept alive by those called the vestal virgins; but 'tis said by some this belonged to another *Vesta*, always a virgin herself, and goddess of elemental fire. (2.) *Cybele* is the next, but by many is confounded with *Vesta*, also called *Rhea*, the goddess of the earth; and therefore was represented with towers on her head, sitting on a chariot drawn by lions, and a great number of trees and animals round about her. (3.) *Ceres*, the daughter of *Saturn* and *Ops*; the goddess of corn and tillage. *Pluto* having stolen her daughter *Proserpina*, she lighted two torches at mount *Ætna*, to seek after her through the world. Therefore her statue holds a torch in one hand, and a nosegay of poppies in the other, to soothe her grief with sleep. Her head was beautified with yellow hair, and crowned with a turban

Cybele.

Ceres.

turban composed of the ears of corns. (4.) The Muses; they were nine virgins, the daughters of Jupiter and Mnemosyne: they were mistresses of the sciences, and presidents of musicians and poets. Their names were Calliope, the goddess of rhetoric; Clio, of history; Erato, of amours and poetry; Thalia, of comedy; Melpomene, of tragedy; Terpsichore, of dancing and balls; Euterpe, of singing and music; Polyhymnia, of song and history; and Urania, of astronomy and divinity. They were all called by several names: as Pierides, Heliconiades, Parnassides, Cytherides, Castalides, and Aganippides. (5.) Lastly, Themis, with Astræa and Nemesis, conclude the number of these deities. Themis was born of Cœlus and Terra, and is the goddess of right. Astræa, the daughter of Jove and Themis, and goddess of justice. Nemesis was the daughter of Jove and Neceffitas; and was the goddess that rewarded virtue and punished vice.

The Muses.

Their names.

Themis,
Astræa, and
Nemesis.

The sylvestrian and rural gods are reducible to the following classes, viz. (1.) Satyrs, who were partly of human, partly of bestial form; for they had heads of human shape, but armed with horns; they had brutish ears; crooked hands; rough hairy bodies; goat's legs and feet; and tails not much shorter than horse-tails. Nothing can be more salacious and libidinous than a satyr. The principal of these filthy monsters was the famous god Pan, who first invented the musical pipe, and presides over shepherds and hunters, the mountains and flocks thereon. Also Sylvanus the god of the woods, and Silenus the god of rural jollity, were two other remarkable satyrs. (2.) The Fauni or Fauns; these differ only in name, not in form, from satyrs. These were properly the arestic deities or gods of the fields, whom the country boors had in great veneration. (3.) Priapus was the son of Venus and Bacchus, and therefore no wonder he was the most impudent and obscene deity that Paganism itself could produce: his story is too filthy to relate, and shall therefore say no more of him. (4.) Aristæus and Terminus were two other rural deities. Aristæus invented the arts of making oil, honey, and cheese; for which they paid him divine honours. Terminus (a mere bound-stone) was reckoned a god, and that the boundaries and limits of men's land and estates were under his protection.

Gods of the
woods.

Satyrs:

Pan.

Sylvanus.

Silenus.

The Fauni.

Priapus.

Aristæus and
Terminus.

The

The rural
goddesses.
Diana.

Pales.

Flora.

Feronia and
Pomona.
Vertumnus.

Nymphs.

Genii.

Dryades.

Hamadryades
Oreades.

Nepææ.

Limoniades.

The marine
deities.

Neptune.

Amphitrite.

The rural and sylvan goddesses were counted the following. (1.) Diana, (called Luna and Hecate) the daughter of Jupiter by Latona, at the same birth with Apollo; who out of love to chastity, avoiding consort with men, retired into the woods, and there diverted herself with hunting wild beasts, carrying always a bow and quiver: whence she is reckoned the goddess of the woods and the chase. Also she was supposed to be very helpful to women in child-bearing.

(2.) Pales was esteemed the goddess of shepherds and pasture, and reckoned the inventress of corn, &c. and was thought by some to be the same with Ceres or Vesta.

(3.) Flora was the goddess and president of flowers. But at first was only an infamous shameless strumpet, who by her vile trade had heaped up a great deal of money, and made the people of Rome her heir; who, in return, placed her among the divinities, and honoured her memory with the most lewd and dishonourable actions and practices on her birth-day.

(4.) Feronia and Pomona were two goddesses of trees and fruits. The latter was advised to a state of matrimony by the god Vertumnus in the guise of an haggard old woman, but to no purpose; till turning himself into a fair young man, he caused her soon to feel the force and power of love, and she readily submitted to his wishes.

(5.) The nymphs; these were a company of neat pretty charming virgins, placed near the pleasant gardens of Pomona. They were of three sorts,

viz. 1. Celestial, called Genii, who guide the spheres, and dispense the influences of the stars to things on earth.

2. The terrestrial nymphs, as Dryades, who presided over the woods, and lived in the oaks; and

Hamadrydes, who are born and also die with the oak.

The Oreades, which presided over the mountains.

The Napææ, which presided over the groves and

valleys. The Limoniades, over the meadows and

fields. 3. The marine nymphs, of which by and by.

The third class of Heathen deities, are those we call marine and river gods and goddesses; the principal of which are the following.

(1.) Neptune, the son of

Saturn and Ops, and brother to Jupiter and Pluto;

his wife Amphitrite, daughter of Nereus; and those

were the two chief deities of the sea: he was represented with black hair and blue eyes, arrayed in a

mantle

mantle of azure, holding a trident for his scepter in his right-hand, and embracing his queen with his left. He stands upright in his chariot drawn by sea-horses, and attended by nymphs, &c. (2.) Proteus was the son of Neptune, say some; others say, of Oceanus and Tethys: his business was to tend the sea calves; and was remarkable, for that he could turn himself into all shapes. (3.) Triton, was the son of Neptune, and also his trumpeter; his shape was a man to the middle, a dolphin below, and his two fore-feet like horses, with two circled tails. (4.) Oceanus was the son of Coelum and Vesta, husband to Tethys, god of the sea, and father of the rivers and springs. (5.) Nereus, the son of Oceanus and Tethys, and father of fifty daughters, called from him Nereides, or sea-nymphs. (6.) Palæmon and his mother Ino, together with the fisherman Glaucus, are reckoned among the sea deities. (7.) The Sirens: these were a kind of mermaids, having the faces of women, but bodies of flying fish. They were excellent songsters that played on the Sicilian coasts, and tempted passengers on shore, where they sang them asleep, and then killed and robbed them. (8.) Scylla and Charybdis were two other sea monsters; Scylla was the daughter of Phorcus, beloved by Glaucus; whom therefore the witch Circe by her enchantments turned into a rock, with dogs about her lower parts. Charybdis was a very ravenous woman, who stole away Hercules's oxen, for which theft Jupiter struck her dead with thunder, and then turned her into a gulph, or whirlpool in the Sicilian sea, and over-against Scylla. (9.) The sea nymphs were the Nereides afore said. The Naiades or Naiades, which preside over fountains and springs. The Potamides, which preside over rivers; and Limnades, who preside over lakes.

Proteus.

Triton.

Oceanus.

Nereus.

Nereides,

Palæmon,

Ino, and

Glaucus.

Sirens,

Scylla, and

Charybdis.

Watery nymphs.

Nereides.

Naiades.

Potamides.

Limnades.

We are now come to the class of infernal deities; but let us first take a cursory view of the gloomy regions where they dwell, and over which they rule. The general name thereof is Hades or Tartarus, both which signify what we call hell. The passage leading thereto was a wide dark cave, through which you pass by a steep rocky descent till you arrive at a gloomy grove, and an unnavigable lake called Avernus, from whence such poisonous vapours arise as strike birds dead

A view of the Pagan hell.

Hades or

Tartarus.

The lake

Avernus.

flying

Old Charon.

flying over it. Yet over this lake the souls of the dead must pass; to which end a nasty, old, decrepid, long-bearded fellow, called Charon, attends with a ferry-boat, and carries them over to the other side, after they have paid him his fare, which is at least an halfpenny.

The rivers of hell.

Acheron.

Styx.

After this there are four rivers to be passed over, viz. (1.) Acheron, whose waters are extreme bitter. (2.)

The next they met with was Styx, a lake rather than a river, and so sacred to the gods, that if any swore by it, and broke his oath, he was deprived of his god-head, and drank no nectar for an hundred years. (3.)

Cocytus.

The next was the river Cocytus, which flows out of Styx with a lamentable groaning noise; and imitates the howling, and increases the exclamation of the damned. (4.) The last is the river Phlegethon, so called because it swells with waves of fire, and all its streams are flames.

Phlegethon.

The three-headed dog Cerberus.

The souls having passed these rivers, are conducted to the palace of Pluto, where the gate is guarded by Cerberus, a dog with three heads; whose body is covered with snakes instead of hair. This dog is the porter of hell, begotten of Echidna by the giant Typhon. We are now arrived to

Pluto and Proserpina.

Pluto, the king of hell, the son of Saturn and Ops, and brother of Jupiter and Neptune. He obtained these infernal dominions by lot when his father's kingdom of all the world was divided as before related; and also because he invented burying and funeral obsequies for the dead. He sat on a throne covered with darkness, holding a key in his hand, and crowned with ebony, and by him his queen Proserpina, whom he stole from Ceres, as before observed.

Plutus, or Mammon.

Some, from a likeness in name and office, to Pluto join Plutus the god of riches and wealth, the son of Jafon by Ceres; he is the same deity which in the New Testament is called Mammon. He was blind and lame, injudicious, and very timorous.

Judges of hell, Minos, Æacus, and Rhadamanthus.

The next ministers in the œconomy of hell are the three judges, Minos, Æacus, and Rhadamanthus; the two first were the sons of Jupiter by Europa, the latter by Ægina. These are believed to judge the souls of the dead. Rhadamanthus judged the Asiatics, and Æacus the Europeans. But Minos holds a golden scepter, sits alone, and superintends the judgments of the other two.

The

The Fates come next to be observed: they are three old ladies, arrayed in garments of ermine, white as snow, with a purple border. They are the daughters of Erebus and Nox; the goddesses of destiny; their names are Clotho, Lachesis, and Atropos. These order and manage the fatal thread of life. Clotho draws the thread, Lachesis turns the wheel, and Atropos cuts it asunder when spun to a due length; then down we drop to Hades or hell.

Clotho,
Lachesis,
Atropos.

The Furies (called also Eumenides, Diræ, and Canes,) next present themselves. They have faces like women, their looks full of terror, hold lighted torches in their hands, and snakes and serpents lash their necks and shoulders. They are the daughters of Nox and Acheron; their names are Alecto, Tisiphone, and Megæra; all called by one common name Erinnyes. Their office is to punish the crimes of wicked men, and to torment and frighten them by following them with ghastly miens and burning torches.

The furies of
hell.

Alecto, Tisiphone,
Megæra.

Moreover in these infernal regions you meet with the most antient deities, Erebus, and his wife Nox, of whom Mors was born, and his brother Somnus. Erebus and Nox preside over darkness and the night; Mors, over death; and Somnus is the god of sleep, who by his servant Morpheus, sends dreams to us above while sleeping.

Erebus, Nox,
Mors, Somnus,
Morpheus.

In hell are also the following monsters. (1.) The Centaurs; whose upper parts were human, but had the body, legs, &c. of an horse; begotten of a cloud by Ixion, which he thought had been Juno. (2.) Geryon, who had three bodies; he was slain by Hercules, who took away his cattle also, though guarded by a dog with two heads, and a dragon with seven. (3.) The Harpyies, born of Oceanus and Terra; who had the faces of virgins, bodies of birds, and their hands arm'd with claws; their names were Aello, Ocypete, and Celeno. (4.) The Gorgons, Medusa, Stheno, and Euryale, who were daughters of Phorcus and Cete; they had heads covered with snakes instead of hair, which so terrified beholders, that they immediately turned them to stones. (5.) The Lamiae and Empusæ, who had but one eye, and one tooth common to them all. They had faces, necks, and breasts like women; but bodies covered with scales, and tails of serpents.

The monsters
of hell.

Centaurs.

Geryon.

Harpyies.

Gorgons.

Lamiae and
Empusæ.

(6.) The

Chimæra.

(6.) The Chimæra, a monster vomiting fire; he hath an head and breast of a lion, the belly of a goat, and the tail of a dragon, and was slain by Bellerophon.

Sphinx.

(7.) The Sphinx, begotten of Typhon and Echidna; had the head and face of a virgin, wings of a bird, and body and feet of a dog. Her riddle was explained by Oedipus; at which being enraged, she threw herself from a rock and died.

The most famous of the condemned in hell.

The giants.

The most famous of the condemned in hell are the following. (1.) The giants, sons of Coelum and Terra; they were very high in stature, had horrible dragons feet, and their whole mien full of terror: they waged war against the celestial gods upon the Phlegrean plains, but were overcome, and struck down to hell with Jupiter's thunderbolts and the arms of the gods.

Typhon,
Ægæon,
Alceus,
Tityus.

The principal of which were Typhon, Ægæon, Alceus, and Tityus; and in order that they might not rise again, the island of Sicily was fixed on Typhon, and mount Ætna on Ægæon, which, when he heaves, casteth forth flames of fire; and Tityus's doom was to have a vulture always gnawing his liver, which grows afresh every month. (2.) Phlegias, who, for firing

Phlegias.

Apollo's temple at Delphi, was sentenced to have a great stone hang over his head, ready to fall each moment to crush him to pieces. (3.) Ixion his son,

Ixion.

who, for attempting to violate the chastity of Juno, was struck to hell, and tied to a wheel, which turns about continually. (4.) Sisyphus, a notorious robber,

Sisyphus.

who is condemned to roll a great stone up to the top of a hill, which ever slides down again, and makes his labour perpetual. (5.) The Belides were fifty virgin

The Belides.

sisters, daughters of Danaus, who, by his command, did all (but one) slay their husbands on the wedding-night; for which impiety they were condemned to draw water out of a deep well, to fill a tub whose bot-

Tantalus.

tom was full of holes like a sieve. (6.) Tantalus invited the gods to a feast, and to prove their divinity, he killed, boiled, and served up the joints of his son Pelops on the table before them to eat: they abstained from such horrid diet, and condemned Tantalus to stand in water up to his hips, which he could not drink; and to have meat placed just at his mouth, which yet he could not taste; and was thus tormented and teased with eternal hunger and thirst.

In these Tartarian regions is a place abounding with all kind of pleasures and delights, called Elysium; because thither the souls of the good come after they are loosed from the chains of the body. This is the Heathen paradise of delights consisting of most pleasant plains, the most verdant fields, the shadiest groves, and the finest and most temperate air that can be produced. After the souls of the pious had spent many ages in the Elysian fields, they drank the water of the river Lethe, which made them forget all things past; and then returned to the world again, and possessed new bodies. 'Twas necessary they should forget the pleasures they enjoyed in Elysium, that they might willingly return again to this miserable life.

The Elysium
or Heathen
paradise.

The river
Lethe.

The fifth class of Heathen deities were those of a subordinate and miscellaneous nature. Such were, (1.) The Penates, a sort of Teraphim; some of which presided over kingdoms and provinces, others over cities, and others over particular houses and families. (2.) The Lares, who were the children of Mercury and the nymph Lara; these were another sort of domestic gods, who presided over houses, streets, and highways. They were sometimes cloathed in the skins of dogs, and sometimes fashioned in the shape of hogs. (3.) The Genii were a sort of demons, whom they believe to preside over the births of persons, and attend them as guardian angels all their lives. Those which were proper to women were called Junones. (4.) Libitina, the chief of the funeral deities. And besides these, there were particular gods and goddesses allowed to preside over all the actions of life from the cradle to the grave.

Subordinate
gods.

Penates.

Lares.

Genii.

Libitina.

The sixth class were those called Demi-gods and Heroes, who were very numerous; as Hercules, Theseus, Perseus, Æsculapius, Prometheus, Atlas, Orpheus, and Amphion, Achilles, Ulysses, Orion, Castor and Pollux, Jason; and a multitude of others, of whom it were tedious to recount an hundredth part of what is recorded of their valiant exploits, and heroic and incredible atchievements; which you may read at leisure in the fabulous poets.

The seventh and last class of Heathen deities were those I termed modal deities; and are the same as mentioned under the sixth species of idolatry foregoing, of which I shall say no more.

The

The Pantheon The temple which the Romans built, and therein placed the images of all the gods and goddeses, was called the Pantheon, or temple of all the gods; which when it came into the hands of the Christians, pope Boniface III. dedicated to the Virgin Mary and all saints; which was analogous to its former use and honour. But this is only one thing in which the papists heathenize, amongst many others.

The meat and drink of the gods, ambrosia and nectar. Though the Pagans had such a multiplicity of deities, not one of them could live without eating and drinking; but to solve this, they artfully found out a food called ambrosia, and a drink called nectar; both which, besides the most sweet and delicious taste and flavour, had the property of communicating immortality; with these therefore they had the good manners to feed their gods; and by this means, of mortal men they made what number of immortal deities they pleased; the chief of which are those we now discoursed of.

Of the Heathen festivals. The festivals and solemnities of the Heathen were necessarily very many, since almost every particular deity was allowed those sacred honours: as the Saturnalia, a feast of five days continuance dedicated to Saturn; Adonia, to Adonis; Ambervalia, sacred to Ceres; Bacchanalia and Orgia, Liberalia, Dionysia, all the feasts of Bacchus; Cerealia, others of Ceres; Lemuria, of the Lemures or night-ghosts; Lupercalia, of the god Pan; Munychia, of Minerva; Faunalia, of the Fauns; Anthephoria, of Proserpine; Megalesia, of Cybele; Floralia, of Flora; with numberless others; all which were celebrated in a manner suitable to their notions of the deities to which they were dedicated.

Pagan priests. The Pagans distinguished the priests peculiar to each divinity by different appellations also. Thus the Luperci were the priests of Pan; Flamen Dialis, the priest of Jove; Flamen Quirinalis, of Romulus; Flamen Martialis, of Mars; Virgines Vestales, or the Vestal Virgins, priestesses of Vesta; Galli, priests of Cybele; Phœbades, of Apollo, &c.

The names of priests in several nations. The different Heathen nations of the world give the following names to the priests, viz. The Romans call theirs Flamines; the antient Britons theirs Druids; the Indians theirs Brachmans; the Mogul's Indians theirs

theirs Daroes or Harbods; the Persians theirs Sedre; the Tartarians theirs Lama; the Moroccos theirs Al-faquis; and the Canada West-Indians theirs Pawwaws; the Chinese and Japonese call theirs Bonzes.

In sacrifices, the beasts offered to the celestial gods were white, and those to the infernal ones black: to Jupiter they sacrificed a white ox; to Neptune, Mars, and Apollo, a bull, ram, and boar; to Ceres they offered milk, honey, and the sow pig; to Æsculapius, goats and poultry; to the Lares a cock; to the Sun and Mars an horse; to Juno a she-lamb; to Venus a dove or pigeon; to Diana a crow; to Pan and Minerva she-goats; and kids to the Fauns.

The beasts appropriated in sacrifices.

Of beasts, the lamb was sacred to Juno; lions to Vulcan; the hind to Hercules; the wolf to Apollo; the horse to Mars; the calf to Isis; dogs to the Lares; serpents to Æsculapius; the grasshopper to Apollo; the dragon to Minerva, Bacchus, &c. Among the birds, the hawk was sacred to Apollo; the eagle to Jove; the goose to Juno; the dove to Venus; the crow to Apollo; the cock to Æsculapius, Minerva and Mars; owls to Minerva; the vulture to Mars; the phoenix to the Sun. Among the trees, the fir was sacred to Bacchus; the cypress to Pluto; the cedar to the Furies; the ash to Mars; the oak to Jove; the laurel to Apollo; the myrtle to Venus; the olive to Minerva; the poplar to Hercules; the pine to Cybele; the rose to Venus; the vine to Bacchus, &c.

The beasts, fowls, trees, &c. sacred to the gods.



OF MYTHOLOGY; or the Explanation of the fabulous Histories of the Heathen Gods and Heroes.

Mythology,
what.

MYTHOLOGY is the interpretation of the fabulous stories concerning the Pagan deities, heroes, monsters, &c. according to the historical, moral, and philosophical meaning and signification of each, couched under and disguised by poetic fiction and romantic circumstances of various sorts.

The origin of
Heathen fa-
bles from the
Scriptures.

Most of these fables and fictitious relations took their rise from the sacred scriptures of the Old Testament; as plainly appears from Hesiod's Theogony, or Genealogy of the Gods, and Ovid's Metamorphoses. For Hesiod deduces the pedigree of all his fabulous deities originally from Chaos, which he makes the first of all the gods: thus Moses derives the world, with all its beauties and glory, from an original chaos, or a confused and undigested heap of matter; which, he says, was without form and void.

Chaos.

The analogy
between Mo-
ses's history
and Hesiod's
fiction, in his
theogony.

Hesiod tells us, that immediately after Chaos, appeared Tellus, Tartarus and Amor; by Tellus, he meant the earth, by Tartarus the unseen abyss in or under the earth, and by Amor the lovely beauty and harmony of the world. Agreeably to this Moses, after he mentions the chaotic state of the earth, speaks of the face of the deep, or abyss, and then the regular disposition and beautiful order of the world by the divine wisdom and power of the Creator ensued; in which things there is an evident analogy between them.

Again, Hesiod tells us, that Chaos brought forth Erebus and Nox, that is, gloominess and night: and Moses says, that while the earth was in the chaos, a gloomy darkness overspread it, and all was night; for there was no light. Again Hesiod says, from Nox, or night, sprang Æther and Hemera, that is, air and the day; and that they were produced, when Amor
and

and Erebus were mixed together; that is, when light was divided from the darkness, and both together made one day. All which exactly answers Moses's account of the creation of the firmament, the day and the night.

Hesiod farther tells us, that Tellus begat Cœlum, every way equal to itself, and beset with stars, and which covered the whole earth, and was the seat of the blessed gods. That is, in Moses's words, God made and called the dry land earth (Tellus,) and the firmament he called heaven (Cœlum,) in which are the stars, which he made also. He farther tells, that the earth (Tellus,) begat high mountains and delightful caves of the goddesses nymphs; as also Pelagus and Pontus (seas;) agreeable to the Mosaic account of the dry land, and the seas. Then he relates the birth of Oceanus (the ocean,) and a vast progeny of other deities, amongst which was Saturnus, from the embraces of Tellus and Cœlum, or the energy and prolific influences of the earth and the heavens; and by this means he fills the world as full of terrestrial, celestial, and marine gods, goddesses, nymphs, &c. as Moses had done with men, beasts, fowls and fishes: so that it is to me evident, that the beginning of Hesiod's Theogony is no other than a poetical imitation of Moses's Cosmogony, or creation of the world.

Hesiod's Theogony a poetical imitation of Moses's cosmogony or creation of the world.

The fable of Saturn, as before related, may be interpreted, (1.) In a philosophical sense: for by Saturn is meant time; Saturn in Greek is called Cronos, and time Cronos; the difference is but one letter. Saturn devoured his children, so Time devours and consumes all things it has produced: or else, the years, months and days, are the children of Time, which he devours, and again produces anew. Lastly, Saturn had his scythe, so has Time wherewith he mows down all things; and Saturn's serpent biting his tail is a proper emblem of the endless circulation of years, ages, and other periods of time.

The fable of Saturn explained. The philosophical sense.

Secondly, Saturn, in an historical sense, is Noah: for 'tis said in his time there was but one language, which was common to men and beasts; so in Noah's days the whole earth spake but one tongue. Saturn's

The historical sense; Saturn is Noah.

wife was Tellus, or Rhea, or Ops, all which signify the earth: and Noah, in the original Hebrew, is said to be a man of the earth, or an husbandman. Saturn is said to have found the art of cultivating vines and fields, and by scripture we find Noah the first planter of vineyards. Again, Noah was overcome with wine, so Saturn protected drunken men. Noah cursed Ham for seeing his nakedness and not hiding it; so Saturn made a law to punish those who should look on the gods naked. Noah and Saturn both foretold a flood, and the building an ark, &c. Saturn devoured all his sons but three; so Noah left all the old world behind him, dead and devoured as it were, whilst he with his three sons escaped with life; with many other parallel cases.

The golden, silver, brazen and iron ages moralized.

In Saturn's reign was the golden age, which the poets magnify the happiness of to that degree, that they would persuade us the earth spontaneously brought forth its fruits without man's labour; that all things were common to all; that there were no quarrels nor contentions among any; but that all the earth enjoyed a perfect scene of uninterrupted ease, peace, saturity, and delight. The moral of which is, that in the pristine state of the world, men's reason, natures, and manners, were more perfect, and conformable to the rules of justice and equity; and according as this their original moral rectitude declined, and gradually became depraved and corrupted in subsequent ages, so the poets on that score made the silver, the brazen, and the iron age, to succeed in order; and thereby beautifully represented the fatal gradation from primæval virtue to modern vice. 'Tis supposed this excellent fiction took its rise from Nebuchadnezzar's dream.

The historical meaning of Jupiter, Pluto, and Neptune.

Jupiter, according to historians, was king of Crete; and having deposed his father, afterwards divided the kingdom by lot with his two brothers Neptune and Pluto; and because the eastern part fell to Jupiter, the western to Pluto, and maritime to Neptune, from thence they took occasion to feign, that Jupiter was king and god of heaven, the sun first rising on his dominions; that Pluto was the sovereign of hell, because the sun going beneath his territories, left the earth

earth in gloomy darkness; Neptune also must needs be god of the seas, whose jurisdiction lay bordering upon them. Again, in a philosophical sense, Jupiter is taken for the air and heaven, and therefore commands the thunder, lightning, &c. Some by Jupiter understand fate, the stoical cause of all things. Others say by Jupiter is meant the soul of the world, or that principle which actuates the world, and renders it prolific and productive of all things.

The philosophical meaning of Jupiter.

By Apollo is meant the sun, as is evident, since he was the god of prophesy and divination, as the sun by his luminous beams dispels darkness, and brings concealed and hidden things to light. Apollo presided over the art of medicine; thus the sun by its salutary and balmy rays gives natural life to all things, and causes the plants and herbs to grow for the purposes of health and medicine. Apollo's darts are an apt emblem of radiating beams of light, which the sun as it were darts or shoots upon the body of the earth. Lastly, Apollo presided over music; and is not the sun the true cause of the harmony of the spheres? And does not his harp of seven strings represent the seven planetary orbs, wherein they dance about the sun perpetually?

The fable of Apollo explained of the sun.

By Mercury is meant the faculty of eloquence, or use of speech; his name in Greek (Hermes) being composed of two words, signifying, to speak. Hence he is called the nuncio of the gods, because by speech we are able to communicate our thoughts to others, and make our words the messengers of our minds. Mercury was allowed wings; so our words fly swiftly through the air: he held a golden wand, to shew the excellency of seasonable and friendly admonition; he was the interpreter of the gods, as words and language are of our minds to one another: he was the god of merchandise, since all commerce is transacted by means of the sociable faculty of speech. He conducted the souls of the dead to the shades below, either to hell or the Elysian fields; which shews how much a man's future state depends upon the nature and tenor of our speech and discourse: thus our Lord says, "By thy words thou shalt be justified, and by thy words thou shalt be condemned." He stole Vulcan's tools, Venus's

The fable of Mercury moralized; Mercury means eloquence.

girdle, and attempted Jupiter's thunder; all which shew the thievish power of eloquence, which steals from us our very senses, and disarms us of our reason in the attacks of love and sophistry.

By Mars is meant war.

The fable of Mars holds forth the nature of war: his countenance and actions before related are all correspondent thereto; and all so easy to be interpreted and applied, that the fable itself is its own mythologist.

Bacchus is Nimrod, or Moses.

The moral of his fable.

Bacchus is said by some to represent Nimrod, by others Moses; there being many circumstances in which he may be thought to resemble both, too tedious here to enumerate. But as to the moral sense, 'tis obvious Bacchus means wine among the poets. Thus Jupiter is said to bear Bacchus in his thigh, and thereby to go limping; which shews how we reel to and fro, and stagger through the influence of too much wine. Bacchus is always a boy, so the oldest men when drunk are as silly as children. Bacchus is naked; and does not wine divest men of their reason, and make them lay open all the secrets of their minds and bodies too? Bacchus has horns; and how many does wine occasion to be crowned with those ensigns of cuckoldom? Bacchus was enflamed with the love of Venus and Ariadne; thus wine is a never-failing provocative to venery and debauchery; besides abundance of other parallel cases.

By Juno is meant the air.

By Juno, the consort of Jove, is meant the air: she was both sister and wife to Jupiter; so the air was produced at the same time as the sky, and was closely conjoined therewith. And by the commixture of the influences of the heavens, and the vapours of the earth in the air, they supposed all things almost were produced, according as the most numerous issue of gods and goddesses sprang from the embraces of Jove and Juno.

Minerva is the symbol of wisdom and virtue.

Minerva is supposed by some to personate Eve in the mask of fable; but be that as it will, 'tis certain she was the symbol of wisdom and chastity: for Minerva was born of Jupiter's brain; thus true wisdom is the offspring of heaven, and chastity the most heavenly and godlike virtue. She was born armed; so a wise man's soul is armed with wisdom and virtue, and

and is thereby rendered invincible: she was always a virgin, as the wise and virtuous person is often represented as cloathed with virgin innocence and purity. Minerva has a severe and stern countenance; for nothing renders a man more awful and truly great and noble, than sagacity, prudence, and a blooming virtue: she was the inventress of many noble and useful arts; and truly most arts and sciences have owed their original to wisdom and learning. Minerva's spindle and distaff teach an excellent lesson of industry to every virtuous and discreet woman. When Tiresias saw Minerva naked, he lost his sight indeed, but became a prophet instantly; shewing that wisdom and virtue infinitely recompense all the labour, hardships, and damage we sustain in acquiring them. The owl was sacred to Minerva, to shew that a wise man can see where others are stark blind. Minerva bore in her shield the shocking head of Medusa, to intimate nothing is more formidable than the weapons of wisdom and virtue, even in martial affairs.

That Venus is the emblem of love is well known; The fable of the manner of her birth declares her to be carnal lust; Venus moralized. her companions shew the wanton dispositions of amorous persons, and their strange propensities to obscene pleasures. She presides over beauty, which is the great fomentor of impure desires and unchaste love. Venus rides in a chariot, and no wonder, for who rules with more imperious sway, and leads more captives in triumph, than the passion lust? She wears a crown, as being always victorious. She carried a looking-glass, to shew her the frailty of her beauty by the brittleness of the glass. She was born from the sea, to shew the turbulent and restless state of lovers. She was wife to Vulcan; nothing being a more constant associate of impure and unlawful amours, than a dark deformity of mind. She played the whore, was caught in chains of iron, and exposed naked in the embrace of her lover to the contempt of the gods; and what is more common than for a debauchee to walk in the iron fetters of a guilty conscience, and be exposed to the contempt and derision of all?

By Aurora, the poets understood no more than the Aurora, the dawn of the morning, which spreads a diffusive lustre dawn of the

over all the orient skies, and paints the clouds, on which she rides, with all their golden glory, so beautiful to behold in summer-time.

The historical sense of Vulcan is Tubal-Cain.

Vulcan is only a corruption of Tubal-Cain, by an aphæresis of the first syllable Tu; for then it will be Bal-Cain; but the eastern people pronounce B very often like V, which in this case makes Valcain, from whence Vulcan easily flows. Moreover, Vulcan was a blacksmith and the god of fire; and Tubal-Cain was the first artificer in brass and iron we read of; and of consequence they were the same person. Secondly, in a philosophical sense, Vulcan is fire; thus Vulcan is lame, because fire cannot be supported without fuel. He was cast down from heaven, because the lightning is darted thence; and said to fall on the island Lemnos, because it is remarkably subject to lightning. Thirdly, Vulcan in a moral sense is the flame of love; he was the husband of Venus; and whoever give themselves up to her, she seldom fails to make them Vulcans, as filthy, nasty, and deformed as he, as black as hell. Every effeminate man is a Vulcan, a blacksmith, who with his (Cyclops,) deformed and sightless passions, is always toiling at the burning forge of lust, and making thunder-bolts, which at last will fall on his own head.

In a philosophical sense, fire.

In a moral sense, the flame of love.

The fable of Æolus explained.

By Æolus you are to understand an antient king of the Æolian islands, who studied astronomy and philosophy, and particularly the nature of the winds, so that he could tell what times and how long such winds and tempest would be, and when it would be calm; in which kind of skill he was the more perfected by the clouds, mists, and smoke of these islands, which always presaged great store of winds, so that it was generally believed they were under his power, and that he could raise and calm them at his pleasure.

Janus an antient king of Italy; and an emblem of prudence.

Janus was a perfect emblem of prudence. He was the most antient king of Italy, among the Aborigines, and received Saturn when his son Jupiter banished him from Crete, and gave him part of his kingdom. Saturn taught him husbandry, and coining money; and in short his knowledge and skill were such, that he was reckoned the wisest of all kings, and knew things past and future; therefore he was revered, and painted with

two faces, as all prudent men, in a sense, ought to have: for prudence consisteth mainly in a remembrance of things past, and in the foresight of things to come. Janus holds in his hand a key; so a prudent person may be said to have the key of knowledge, and to unlock many doubts, mysteries, and intricacies which puzzle and obstruct others in the affairs and various exigencies of life. Janus's altars and incense shew that the honour and adoration of the Almighty is the effect of prudence and understanding; and that fools only say there is no God, and worship none.

Vesta is the same with fire; as is evident from various expressions in the poets: but it is rather supposed by Vesta is understood the vital flame or heat of the body, which is the first principle of animal nature. The vestal fire was perpetual; so is the native heat of bodies, which constantly warms and actuates the whole. The vestal virgins, if they neglected this fire, and let it go out, were grievously punished, and buried alive. We are those vestal virgins, who, if we neglect to nourish and keep up the vital flame of our bodies to its due tenor, or corrupt and weaken the same by debauchery and ill courses, divers diseases will excruciate and torture us; we stab our reputations, and bury them in ignominy and reproach, whilst we live; and the flame becoming extinct, our memories are interred with our carcases, and rot with them in the grave.

By Ceres is to be understood that genial prolific principle in the earth, which is the cause of vegetation, or of the production and nourishment of herbs, corn, fruits, and trees. Ceres is beautiful and well-shaped, so is the earth arrayed in all the gaiety of vernal verdure and flowery pride. Ceres was born of Saturn and Ops, that is, of husbandry and the fertile soil; so is corn: she wore yellow hair; and the ears of corn, when ripe, are adorned with that golden colour: she was crowned with the ears of corn, so is the earth in harvest. Erichthon contemned the sacrifices of Ceres, defiled her groves, &c. for which she punished him with perpetual hunger. This shews how every (Erichthon) idle person, who hates industry, should be punished with hunger, and clothed with rags. Ceres once absconded herself, and in her absence a general corruption

Vesta means fire, and the natural heat of the body.

The fable of Ceres explained philosophically and morally.

The philosophical signification of the god Pan.

ruption of the corn and fruits ensued, and from thence sprang a great infection among all beasts and cattle; the moral of which is too easy to need explaining.

By the image of the god Pan the poets understood the universe, for the word Pan in Greek signifies All; his upper part resembled a man, his lower parts a beast; because men and beasts make the most considerable part of the world, and the former much the superior. His red face represents the blushing splendor of the skies; his horns those of the moon; his spotted skin, the party-coloured firmament, or the starry sky; his hairy shagged thighs and legs, the shrubs and trees of the earth; his goat's feet, the stability of the earth; and his pipe of seven reeds, the celestial harmony of the seven planetary spheres.

By Diana is meant the moon.

Diana represents the moon; therefore she appears horned. Diana is said to have three countenances; so has the moon her three phases of new, quarter, and full. Diana is said to be a great huntress, because the moon is constantly journeying round the earth, and darting her rays thereon. She was a virgin, because the moon is one, and has no associate. 'Tis said she had a gallant, named Endymion, whom she so loved, as to descend out of heaven to kiss him; which fable implies no more than that Endymion was a great astronomer, and first described the course of the moon. Again,

The fable of Endymion explained.

The fable of Actæon moralized.

As Actæon was hunting one day, he chanced to spy Diana bathing herself in a fountain; and because he dared to behold the goddess naked, she turned him into a stag, whom his own hounds pursued, and devoured him. By which fable is intimated, that those who spend their time in over curious researches into the nature of secret things, are justly made a prey to their idle and impious humours, and generally beggar and undo themselves.

The moral of the fable of the Sirens.

By the fables of the Sirens, Circe, Charybdis, and Scylla, is represented to us the ensnaring nature of pleasures, voluptuousness, lust, and gluttony. The Sirens are the vain deceitful pleasures, which as it were sing and soothe us to sleep, to a state of senseless stupidity, and then never fail to devour us. Circe was that terrible witch who it is said drew down the stars from heaven,

Of Circe, the sorceress.

heaven, and by her forceries turned all her visitants into hogs, dogs, bears, wolves, and such like beasts; and doth not voluptuousness, by a kind of sorcery, so infatuate men and change their natures into a swinish, cynical, and bestial disposition, that they rather resemble brutes than men? And even those who by their wit, learning, and virtue too, have shone like the stars in the firmament, have fallen too often from their glory, by the enchanting power of sensual and obscene pleasure: none being sufficiently guarded against her, but (Ulysses) a virtuous, pious, and valiant man, who scorns the sordid pleasures of a sensual life. Again, Scylla is lust, the fatal rock on which so many have shipwrecked their honesty, honour, and fortunes. Charybdis is the horrible whirlpool of gluttony, the insatiable gulph, which hath drawn down families alive, devoured whole estates, and sucks down all things into an abyss of destruction.

Of Scilla;

and of Charybdis.

Plutus, or Mammon, as being the god of riches, hath his palace in hell, and no place more fitting; for, can any one serve the true God and mammon? Is not wealth the root of all evil? Can there be any more ready way to hell than to hunt after riches? Plutus is said to be lame: Ah! how do rich men limp when they go to give alms, how slow their motion! What dismal grimaces attend their acts of charity! Plutus was blind; and what rich man can see the wants of his poor neighbours? How pur-blind are they to merit! and how few rich men can see any folly or defects in themselves! Plutus was very injudicious; the picture of a rich man! who passeth by good men, and heaps his favours on the bad and undeserving. Plutus was timorous, so are all rich men; they are continually in a panic, and watch their treasures with the utmost care and fear.

The fable of Plutus moralized.

The Centaurs were antient people of Thessaly near mount Pelion, who first broke horses for war; the ignorant country people seeing them at a distance on horseback, supposed they were (both horse and man) but one creature; whence the fable before-mentioned.

The fable of the Centaurs explained.

The fable of the monster Geryon's having three bodies, is thus to be understood: Geryon was, in antient

As also that of Geryon.

antient times, a king of the three Spanish islands called Balearides: or else thus; from the unity there was between the three brethren of that name, who ruled so lovingly together, that they all three seemed to have but one soul.

Harpies,
Gorgons, &c.
moralized.

By the hellish monsters Harpies, and Gorgons, &c. are to be understood the black and devilish arts and practices of lewd and vicious women; who having cast off all shame, modesty, and grace, appear in their affections, passions, and actions, as monstrous and deformed as the infernal inhabitants now mentioned.

The fiction of
the Chimæra
explained.

The Chimæra is a fiction derived from a volcano or mountain of Lycia which casts out fire: for on the top thereof lions harboured; goats in and about the middle, where there was much pasture, and the bottom thereof abounded with serpents; and because Bellerophon made this mountain habitable, he was said to slay the Chimæra.

Tantalus the
emblem of a
miser.

Tantalus was designed to represent a miser; for like him they live in the midst of plenty, but enjoy it not. 'Tis peculiar to them to starve in a continual feast; to famish amidst full barrels, and to freeze by the fire-side.

The story of
Orpheus and
Amphion mo-
ralized.

Orpheus and Amphion are said to be so very skilful in music, that the first played on his harp and sung so sweetly, that he tamed wild beasts, stayed the course of rivers, and made the woods follow him; and that by the melody of the latter, the stones moved so regularly, that they formed the wall of the city of Thebes. The moral of all which is this, that Orpheus and Amphion were both men so eloquent, that they persuaded those who lived savage lives, like the wild beasts, before, to embrace the rules and manners of civil society.

The fiction of
Atlas, whence.

Atlas is said by the poets to have borne the world on his shoulders; which fiction arose hence, that Atlas, an antient king of Mauritania in Africa, first invented the science of astronomy, and reduced the motions of the heavenly bodies to some degree of certainty and regularity, which were all before unknown.

Hesperus

Hesperus was the brother of Atlas, who also studied astronomy, and frequently went up mount Atlas (so named of his brother) to view the stars: at last he went up and came down no more; at this the people imagined that he was carried to heaven, and became the evening and morning star, called Hesperus (or Vesper) and Phosphorus, or Lucifer.

The fable of Hesperus.

The Hesperides were three daughters of Hesperus, by name *Ægle*, *Arethusa*, *Hesperethusa*; and 'tis said in their gardens trees were planted which bore golden fruit; these trees were guarded by a watchful dragon, which at last Hercules killed, and carried away the golden apples. The ground of this fable is supposed to be the garden of Eden, and the forbidden tree of knowledge, and tree of life, the trees which bare the golden fruit.

The gardens of the Hesperides the same with the garden of Eden.

Prometheus, the son of Iapetus, is said to have made a man of clay or earth, and afterwards to steal fire from heaven, in order therewith to put life and soul into his man; this theft so displeased Jupiter, that he sent Pandora into the world to Prometheus with a box, from which, when opened by her husband Epimetheus, there flew out all sorts of evils and diseases which have pestered mankind ever since. And afterwards Prometheus was chained to mount Caucasus, and an eagle perpetually preyed on his liver, as a farther punishment of his impiety. As to the moral of all this, I think his making a man of clay may allude to the creation of Adam out of the dust of the earth: and that Pandora (who also was made by Vulcan at Jupiter's command, and whom every deity adorned with various gifts, Minerva giving her wisdom, Venus beauty, Apollo music, Mercury eloquence, &c. I say this Pandora) was Eve, who, to be sure, before the fall possessed all the heavenly graces and endowments possible, but by her transgression (the fatal box) she opened the way for all the subsequent evils and mischiefs in the world.

The fiction of Prometheus and Pandora applied to the creation of Adam and Eve, and the fall of man.

Deucalion (the son of Prometheus) and his wife Pyrrha, were said to reign in Thessaly, when a deluge happened so great that it overflowed the earth, and destroyed all mankind, excepting only Deucalion and his

Deucalion's deluge was Noah's flood.

his wife Pyrrha, who were carried in a little ship upon mount Parnassus; and when the waters abated, they consulted the oracle of Themis, to know how mankind might be again restored; the answer was, They should cast the bones of their great mother behind them, (i. e. the stones of the earth;) accordingly they did so, and from these stones sprang a new race of men and women. All which, 'tis very evident, is but a poetical metamorphosis of Noah's flood, and some of its most considerable circumstances.

Iphigenia is
Jeptha's
daughter.

Iphigenia was the daughter of Agamemnon and Clytemnestra; her father by chance killed a stag of Diana's, who in revenge stopt the passage of his fleet with contrary winds, and the oracle told them, that Diana would not be appeased, unless some of Agamemnon's blood were sacrificed. Whereupon Ulysses got Iphigenia from her mother by craft; but as she stood by the altar at Aulis, ready to be sacrificed, Diana pitied her, and put a hind in her stead; and made her one of her priestesses, who solemnized her sacrifices with human blood. And now how plainly does this appear to be the scripture-history of Jeptha's daughter, under the disguise of poetical fiction, and some fabulous accommodations?

The fable of
Phaeton vari-
ously applied.

Phaeton was the son of Sol and Clymene; he requested of his father Phoebus to drive the chariot of the sun for one day: he granted it, but warned him of the danger thereof: Phaeton, careless of any future event, mounts the chariot, the fiery horses drove furiously through the heavens, and their driver not able to govern them, let the reins go, and had like to have set the whole world on fire; to prevent which Jupiter struck him with a thunderbolt, so that he fell into the river Eridanus, now called the Po. His sisters were turned into poplar trees, and wept for him with tears of amber on the same river's banks. Some think this Phaeton was Phut, the third son of Cham, who was skilled in astronomy, and therefore called the son of Sol; and that he foretold the great conflagrations in Italy and Ethiopia, which happened *anno mundi* 2426. Others say, this fable had its origin from the history of Elijah, who was taken up into heaven in a chariot and horses of fire.

To Phut, son
of Cham.

To Elijah.

Others

Others think it refers to the destruction of Sodom, Gomorrah, &c. by fire and brimstone rained from heaven. And lastly, 'tis supposed the moral is levelled at ambitious and inconsiderate princes, and prime ministers, who, uncapable of the high and weighty charge they have taken on them, let loose the reins of their indiscreet government, and thus set the subjects all in a combustion, and endanger their own downfall. Such a Phaeton fell upon the river Thames, and set England in flames, not an age since.

To the burning of Sodom, &c.

The moral thereof.

Nisus was a king of the Megarenses, and had a purple-coloured or golden lock of hair among the rest on his head; on this lock of hair the fortune of his kingdom depended. His daughter Scylla fell in love with Minos, who besieged her father in Megara; and cutting off her father's golden lock, she gave it to Minos, and with it the kingdom; whereupon Nisus died with grief, and was turned into an hawk, and his daughter into a lark. Whence the antipathy between these two birds ever since. The whole of this fable is undoubtedly grounded on the Scripture relation of Sampson and his mistress Delilah; with a little variation allowable to the poets.

The fable of Nisus and his daughter, the same with Sampson and Delilah.

Narcissus was feigned to be the son of the river Cephissus and the nymph Liriope. Tiresias being asked concerning the child's fortune at his birth, answered, He should live so long as he did not see himself. He proved so beautiful a youth, that several nymphs fell in love with him, but he slighted them all. Afterwards seeing his own face in a spring, he so fell in love with himself, that he pined away, and dying, was changed into a flower of his Latin name, the daffodilly. By Narcissus is meant the proud and scornful person, who despiseth every body, especially (nymphs) modest, sincere, and humble persons; and is so full of philauty, self-love, self-conceit, that he is enamoured with his own shadow; but never fails to die in the esteem of all wise men, who look on him only as a gaudy, showy trifle, a mere daffodilly.

The fable of Narcissus moralized.

The emblem of a proud and scornful man.

'Tis storied of Midas (a rich king of Phrygia) that he requested of Bacchus, his guest, that all he touched might be gold; 'twas granted, and he soon turned

Midas the emblem of a presumptuous, in-

discreet, and turned his houses and whole mountains into gold; covetous man. and touching his victuals and drink, he turned them into gold too. And now seeing his folly, he desired to have his wish revoked, and he was bid to wash himself in the river Pactolus, whereupon he became the same as he was before, but the river to this day produces golden sand. By this fable is very pertinently set forth the folly of man, in depending upon his own wisdom and sufficiency, and setting light by the divine providence and assistance. For, if we were left to ourselves, we should (Midas-like) be craving the things which would be most pernicious, and soon bring us to repent thereof. From hence too we learn, that God very often brings men to a sight of their folly, and to admire his wisdom and goodness, by permitting them the experience of their own choice a while.

Momus, the mythologic character of a carping critic.

Momus is the last mythologic character I shall consider the moral of: his story has been related, where we find indeed that he was reckoned a deity, but was dignified with no other epithet than that of the carping god. He was said to be the son of Night and Sleep, because of his dull and gloomy mind, which rendered him very imprudent, injudicious, and consequently unfit for a judge or critic. He was called Stygian Momus, because he was hated by the gods and men. He did nothing himself, but spent all his time in reprehending, cavilling with, and depreciating the works and labours of the gods and men. From all which characters, the moral of Momus easily displays itself in the person of an ill-natured, ignorant, envious, carping critic; who, as he is generally too idle and deficient in his intellects to do any thing of merit himself, so he (ambitious notwithstanding) has no other way to distinguish himself, and seem considerable, but by defaming, calumniating, and undervaluing the works and persons of other men. He is conscious of his own imbecillity and incapacity to merit praise and genuine honour; and envying others the happiness, he does all he can to deprive them of it, and make the world believe they deserve it not. But how stupid and vain, as well

as proud and envious, must such a wretch as Momus be, to think that a man's character for learning and merit is to be estimated and determined by his ungenerous, ignorant, and malicious verdict! Does not this great affair depend on the judgment of the wise and prudent, who are well acquainted with the imperfections of human nature, and are therefore to be reputed the only equitable judges of the merit of human productions? Such will make a generous and reasonable allowance for frailties and defects, where the cause and design is good and honourable.

H Of



Of LANGUAGE in general; of GRAMMAR in general; and particularly that of the ENGLISH TONGUE.

Language, what.

LANGUAGE is a set or collection of sounds or notes made use of by any nation or people to express the ideas of their mind, and by this means to render their thoughts and conceptions intelligible to each other. The actual communication of our sentiments to others in this manner, is called speech, or speaking.

Speech.

The component parts of language.

The component parts of a language are different kinds of sounds; of which some are simple, and others variously compounded. The marks whereby the simple sounds are expressed to the sight, are called letters or characters; and the various assemblage and combinations of letters make the expressions of compound sounds; which again are of divers sorts, as syllables, words, and phrases; of which more by and by.

Letters.

Words, &c.

Alphabet.

It is customary among all people to make an orderly arrangement of all the letters used in their language, which we call by the Greek name Alphabet; as also of all the words and terms which compose the same: and such a collection or catalogue of words is by us called a dictionary, and for the learned languages, a lexicon. And the art which teaches how the letters and words of any language ought to be set and combined together for proper speech, is what we call grammar.

Dictionary or lexicon.

Grammar.

Idiom of speech, what.

In language we are to consider two main things, viz. (1.) The idiom, phraseology, or manner of expression, which is peculiar to that nation, and different from what is used by any other. Thus when we say, *All that came out of his loins, the Hebrews say, Out of his thigh. We say, A person is ten years old; the Hebrew idiom is, He is the son of ten years. We say, An husband-man; they, A man of the earth, &c.

*Gen. xlv. 26.

(2.) The

(2.) The second thing is dialect, which is the same in the main as the original language, but differs therefrom in the ending or termination of words, for the most part; the change of many entire words, or the addition or leaving out proper letters in the syllables of words. So the name God in the Standard Greek is Theos, but in the Doric dialect it is Seos; thus for Glossa, a tongue; the Attic dialect says Glotta; and thus in others. Dialect, what.

The relation between the standard or original language, and the dialects which proceed from it, is similar to that between the mother parent and her children; and on this account it is, that those original languages are commonly called mother tongues. Of these parent or mother languages, there are several in the world; some reckon eleven, some count more. Among them all, there are four which deserve more notice than the rest, and they are, (1.) The Hebrew; (2.) The Greek; (3.) The Latin; (4.) And the Old Gothic. The others are less considerable. Mother tongues, what;

The Hebrew tongue is the most antient in the world, at least that are known to the Europeans. From it sprang a very august and flourishing progeny of dialects, viz. the Chaldee, the Syriac, the Arabic, the Samaritan, and the Ethiopic. The two first differ chiefly in the characters, there being a near affinity in the form of the words, and texture of the tongues themselves. The Arabic is a most copious tongue, having a thousand different words for a sword, five hundred for a lion, and two hundred for a serpent. Of the Hebrew dialects.

The chief properties of these oriental tongues are, (1.) The primitive words, or the themes of their verbs, in general, consist of but three letters, and some few of four. (2.) That these letters are all consonants, as PKD, BRZL, &c. (3.) That the vowels are mostly points placed under the said consonants in the theme, as PKD, that is, PAKAD, he visited; BRZL, that is, BARZEL, iron. (4.) That they distinguish the masculine and feminine genders in verbs as well as nouns, by different terminations. (5.) That the Orientals write and read from the right hand to the left, contrary to the Europeans. The properties of the Eastern tongues,

Of the Greek
language and
its several
dialects.

The Greek language is the next mother tongue, and in the texture of its words is as compound as the Hebrew is simple; on which account it obtains a wonderful variety and copiousness of words, beyond any other language. The principal dialects of this tongue are, (1.) The Attic, which was spoken at Athens, and the country round, between Achaia and Macedonia. (2.) The Ionic, used in Ionia, a country in Lesser Asia, between Caria and Æolis, inhabited by a Greek colony in former times. (3.) Doric, spoken by the Dorians, a people inhabiting a part of Achaia. (4.) Æolic, used by the Æolians, who lived in that part of Asia between Ionia and Troas, near the Hellespont.

Of the Latin
tongue and its
dialects.

The Latin is that mother tongue, which of all others can boast the noblest progeny of living and polite dialects; for she gave birth to the Italian, the French, the Spanish, the Portuguese, and a good part of the English, and is herself still in being; and more universally embraced than any other ever was, or, perhaps, ever will be. To give one instance of the different utterance between this great parent and her several daughters, take that of royal dignity, which by the mother tongue herself (the Latin) was called *majestas*; but by the Italian, *maestà*; by the Spanish, *magestad*; by the French, *majesté*; and by the English, *majesty*.

An instance of
their difference.

Of the Gothic
and its dia-
lects.

From the antient Gothic tongue proceeded the two great branches, the Teutonic and Saxon languages; from whence all the northern tongues, as so many grand-children, had their being; as the Swedish, Danish, Norwegian, high and low Dutch, Flemish, Scots, and English. Every one knows, that the bulk of our language is derived from the two great sources of the Teutonic and Saxon. Thus the Saxons said, *fæder*, *sunu*, *hus*, *biscep-ric*, *weorth-scype*, *godleas*, *godlicnesse*, &c. from whence the English say, *father*, *son*, *house*, *bishoprick*, *worship*, *godless*, *godliness*.

Of the Slavonic,
and its
dialects.

To these may be added the Slavonic, another very considerable mother tongue, as being of great antiquity, and very large extent in the north-eastern parts of Europe; the tongues of Russia, Poland, Hungary, &c. are dialects of it. The Old British or Welch, and the Irish, which also the Highland Scots speak,
are

are reckoned among the mother tongues; but have nothing in them worth notice. And thus much for the language in general: I shall now treat of our own language in particular; and first of its composition.

The antient speech of this island was the Gaulic, or old French, as being (in all probability) first peopled from Gallia, or antient France. But, a little before our Saviour's time, Julius Cæsar having invaded and subdued the Britons; and in Claudius's time, and soon after, a Roman colony being planted here, Britain became a Roman province; and the Latin language, which the Romans then spoke, was introduced and mixed with the British; though it never could suppress it. Afterwards, the Roman legions being called home, the Scots and Picts (the inhabitants of North-Britain) took the opportunity to attack and harraßs the northern parts of England; upon which king Vortigern, about the year 440, called to his assistance the Saxons, a great and powerful people in the north parts of Germany, who with their neighbours the Angles, Teutones, &c. came over, under the conduct of Hengist and Horsa, who, subduing the Picts and Scots, were rewarded for their service, first with the isle of Thanet, and after with the whole county of Kent, which they governed about 350 years; but growing powerful, they quarrelled with, and by degrees dispossessed the inhabitants of all the country on this side the Severn, and divided it among themselves into seven kingdoms, called the Saxon heptarchy. Thus they destroyed the British tongue, together with its inhabitants (excepting some who retired over the mountains of Wales, and carried with them their language) and their own language became the general language of the island, and thus continued till about the year 800. Then the Danes infested the north and east parts of England, and obtaining footing, they at last arrived to the sole government of it, in about two hundred years; and so the antient speech became tinged also with the Danish language. But their rule lasting only twenty-six years, made not so great alteration in the Anglo-Saxon, as the next revolution, which was by William the Conqueror, duke of Normandy in France; who came over into England, vanquished the Danes, and subdued the whole land; and as a monument of their

A short account of the English language from its first to its present state. Britain conquered by Cæsar.

Invaded by the Picts and Scots.

The Saxons, &c. arrive under Hengist and Horsa.

They establish their heptarchy.

The Danes invasion and settlement.

The whole land subdued by William the Conqueror

conquest, the Normans endeavoured to make their language as generally received as their commands; and thus compleated the mixture, or rather the medley of language in Great-Britain.

The English tongue a medley of several others.

The English tongue, such as it is at this day, which eighteen hundred years ago was the pure British or Welsh, is now a mixture of (1.) A little British; (2.) a great deal of Latin; (3.) a yet far greater part of Anglo-Saxon, and Teutonic; (4.) some few strictures of Danish; and (5.) an abundance of Norman French. But since those antient times, we have, by means of learning, commerce, &c. received very great improvements from the Greek, Latin, modern French, Italian, Dutch; and many proper names of men, places, and things, from the Hebrew, Syriac, Arabic, and other eastern tongues.

The English tongue is the quintessence of others.

But notwithstanding our language is thus a mixture or compound of such heterogeneous ingredients; yet it must be withal considered, that only the choice and valuable parts of other tongues have been selected and incorporated together in the body of our own, which therefore may be looked upon as the quintessence of various tongues; and by enfranchising and indenizening foreign words and terms of arts and sciences, it is indeed become a very copious, pithy, significant, and learned language; abounding with all the flowers of rhetoric, capable of all the delicacy, fine similies and allusions of poetry, and of supplying both the pulpit and bar with all the force and energy that speech can pretend to.

The English tongue compared with others, and characterized.

In fine, though it be not so sacred as the Hebrew, so extensive as the Arabic, nor quite so learned as the Greek; so neither is it so scanty as the Hebrew, so difficult and irregular as the Arabic, so barbarous as the Irish, so hard and unsounding as the Welch, so uncouth as the Dutch, nor so effeminate as the French; yet it is as fluent as the Latin, as courteous as the Spanish, as courtlike as the French, and as amorous and sounding as the Italian; and is every way enriched and beautified with all the ornaments and decorations any language is capable of, and fitly adapted to the masculine, curious, and noble genius of the renowned people who use it. I proceed now

to say somewhat of the grammar thereof; and first of that science in general.

Grammar is defined to be, The art of expressing the relation of things by words in construction, with due accent in speaking, and orthography in writing, according to the custom of those whose language we learn: or, grammar is the art of speaking and writing truly. Of grammar there be four parts. (1.) Orthography, which treats of letters. (2.) Prosody, of syllables, and due pronunciation. (3.) Etymology, or analogy, which treats of words. And (4.) Syntax, of sentences, or due construction of words.

Grammar defined.

Its four parts, orthography, prosody, analogy, syntax.

Orthography is that part of grammar which teaches the nature, difference, sound, writing, and joining of letters into syllables and words. Letters are the first elements of speech, as being individual articulate voices or sounds.

Orthography, what.

Letters are divided into vowels and consonants. Vowels are those letters, which, of themselves, make a full and perfect sound, and are five, viz. a, e, i, o, u; and to these may be added the Greek y. The other letters of the alphabet are consonants. Of these vowels arise

Of vowels and consonants.

Diphthongs, which are composed of two vowels in one syllable; and they are (1.) Proper diphthongs when both the vowels are pronounced; as ai, in fair; au, in laud; ee, in feed; oi, in void; oo, in food; and ou, in house.—(2.) Improper diphthongs, wherein the sound of one vowel is heard alone, and the other suppressed; as ea, in tea; ie, in fiend; eu, in eunuch; and such other. The meeting of three vowels in one syllable is called a triphthong; as eau, in beauty; ieu, in lieu, adieu, &c.

Diphthongs, what. Proper.

Improper.

Triphthongs.

The consonants are divided into mutes and semi-vowels. The mutes are so called, because they can't be pronounced of themselves without a vowel; they are nine, as b, c, d, g, p, q, t, j, v; which are founded, bee, cee, dee, &c. The semi-vowels are such as yield an imperfect sound without the help of a vowel; as f, l, m, n, r, s, x, z. Of which these four, l, m, n, r, are called liquids, because they easily and smoothly flow away after a mute in a syllable, as in glide, smile, gnaw, brine; but they cannot

Consonants divided into mutes.

Semi-vowels and liquids.

Single and
double.

not be founded in the same syllable before a mute when a vowel follows; as *rpo*, *ldi*, &c. Consonants are also considered as single, as *b*, *c*, *d*, &c. or double, as *x* and *z*; for *x* is composed of *cs*; as *vex* sounds the same as *vecs*; *wax*, as *wacs*, &c. Also *z* is made of *ds*; as *blaze* sounds *bladse* nearly, the *d* being turned off in a strong fibilation or hissing.

Profody,
what.

Profody is the second part of grammar, which treats of syllables and their due division and pronunciation in words; and in respect of this latter part, 'tis called orthoepy, or the right speaking or expressing of words and syllables. Moreover, profody also gives rules for the quantity of voice, and due accenting of syllables in words. As to the former, it properly relates to poetry; the rest will be here considered in order.

Orthoepy,
what.

A syllable,
what.

A syllable is a compleat sound or utterance of one or more letters, in one breath or tone; in which there must be always one or more vowels; as *a*, *va*, *nue*; *o*, *ri*, *ent*: these make the larger members of words; as *a-ve-nue*, *o-ri-ent*. And the number of syllables is various in words; from one, as *I*; to eleven, as in this long word, *ho-no-ri-fi-ca-bi-li-tu-di-ni-ty*. There are generally as many syllables as vowels or diphthongs in a word, excepting the final *e*: as *e-ver*, *e-ve-ry*, *de-face*, *trans-late*, *par-boil*, *blood-hound*, *a-dieu*, &c.

The principal
rules concern-
ing the or-
thoepy and
orthography,
or the right
pronouncing
and writing
letters and
syllables in
words.

As to the orthoepy or duly pronouncing letters and syllables in words, take the following rules. (1.) The final *e* lengthens the vowel foregoing; as *can*, *cane*; *bed*, *bede*; *pip*, *pipe*; *rob*, *robe*; *tun*, *tune*. (2.) Words in *re* sound the *e* before the *r*, like *u*; as *fire*, *fi-ur*; *desire*, *desi-ur*; *rere*, *re-ur*; *massacre*, *massac-ur*; *maugre*, *maug-ur*. (3.) The Latin improper diphthongs, *æ*, *œ*, are founded *e*; as *Cæsar*, *Phœbus*, *Ætna*, *œconomy*, are pronounced *Cesar*, *Phebus*, *Etna*, *economy*. (4.) Also the English diphthong *eo* often sounds only the *e*; as *yeoman*, *feoffee*, *jeopardy*, *leopard*; and like *ee* in *people*, *feodary*; and *eu* at the beginning of words sounds only *u*; as *eunuch*, *eulogy*, *eucharist*; so does *ue* at the end, as *due*, *true*, *pursue*. (5.) *U* makes the *g* sound hard, and lengthens the syllable in *vogue*, *prologue*, *epilogue*, *dialogue*,
(6.) *C*

(6.) C sounds hard like k before a, o, u, l, r, as cat, cost, cup, clear, crow: before e, i, and y, like s; as city, cell, cypress. (7.) Ch is sounded like k; in chart, chord, character. (8.) The syllables ti and ci, if followed by a vowel, sound like sh, or shi; as in fiction, condition, logician, musician, &c. (9.) K begins words of a hard sound before i, e, and n; as keep, kill, know; but before a, o, u, we write c; as call, cold, cup. (10.) G has a hard sound before a, o, u; as gall, gold, guilt, and in ghes for guess. (11.) In words where cc is found between i, the first c is hard, the other soft like s, as the word sicciti sounds siksiti. (12.) When gg occurs, they are both hard, as dogged, rugged. (13.) In words ending in ck, 'tis most polite to omit the k; as for logick, musick, physick, should be wrote logic, music, physic. (14.) The soft sound of g before a, o, u, at the beginning of words, is expressed by j consonant, as jail, jolly, julep; and the gentleman is truer orthography than gentleman. (15.) The sound of f, in Greek words, must be wrote with ph; physic, philosophy, Philip, phlegm, &c. (16.) The syllable que at the end, is sounded like k; as antique, pique, barque; and q is never written without u after it. (17.) In some or most French words, ch is sounded like sh; as machine, chevalier, capuchin, chaise, are sounded, masheen, shevalier, capusheen, shaize. (18.) The final e makes a distinct syllable in foreign words which end therein, as Mam-re, Eu-ni-ce, si-mi-le.

In diastasis, or the division of words into syllables, The rules of observe the following rules. (1.) When a single consonant comes between two vowels, 'tis joined with the latter in spelling, as na-ture, e-ve-ry, di-li-gent; except x, which is joined with the first, as lex-i-con, ox-en. (2.) But compound words must be divided back into their component parts; as un-armed, unusual, safe-ty, in-ure, ad-orn, name-less, &c. (3.) All terminations must be separated, as deliver-ed, deliver-edst, deliver-eth, deliver-est, deliver-ing, deliver-er, deliver-ance, &c. (4.) All those consonants which can begin a word, may begin a syllable together; and such are, bl, cl, fl, gl, pl, sl; br, cr, dr, fr, gr, pr, tr, wr; ch, dw, gn, fn, sp, sq; kn, qu, sc, sh, sm,

Of accenting
words, and
the principal
rules directing
thereto.

fm, ft, fw, th, tw, wh; also these treble consonants; fch, scr, shr, skr, spr, spl, str, thr, thw. (5.) A mute and liquid go together in the last syllable; as cra-dle, ti-tle, fa-ble, mau-gre, &c. (6.) If two consonants meet that can't begin a word, they must be divided; as sel-dom, num-ber, pop-py, ac-cord, ar-dent, &c. (7.) When two vowels meet, and both are distinctly founded, they must be divided; as re-enter, mu-tu-al, La-o-di-ce-a, di-ur-nal, &c.

The true accenting of words is a difficult thing, as it is a rising or falling of the voice above or below its usual tone: it is an art somewhat arbitrary, and of which we have but little use, and know scarce any thing but by the laws of custom. However, the following directions may be of service in this affair. (1.) When a word is both the name of a thing, and signifies action, the first syllable is accented in the former case, but the last in the latter; as in the name itself áccent; but accént, to raise or fall the voice; cóntest, a dispute; to contést, to dispute; récord, a writing; to recórd, to commit to writing, &c. (2.) When any ending, as -able, -ful, -ish, &c. is joined to any monosyllable, the first syllable is long or accented; as peáce-able, sínful, sélfish, toílsome, gódly, &c. (3.) Words of two syllables ending in er, or ure, are accented on the first generally; as, énter, ráther, hónor or hónour, vénture, &c. (4.) When a word obscurely ends in -le or -en, the accent is on the first syllable; as tróuble, gárdén. (5.) The particles are compounded with words of one syllable, they lengthen the word; as allúre, collégue, pollúte, refér, defér; except cónduit, pérfect, prélate, and some others. (6.) If an ending be added to a word of two syllables, the syllable that was first long continues so, as prófit, prófitable; except protést, protéstant. (7.) In words of more than two syllables, the accent is generally on the third vowel from the last; as salvátion, damnátion, fidélity, &c. Except (8.) when the vowel is long by position, i. e. when set before two or more consonants, and bears hard upon them, then it is long; as abúndance, accómplish, illústrate, horizón, &c. (9.) Diphthongs and triphthongs are mostly long, as embróider, repróof, rejóice, recéipt, beauté, adiéu, except lieuté-
nant,

nant, &c. (10.) In foreign words the accent lies on that vowel, which, in the original, was a diphthong, as Darius, encómium, eclípsis, Eccopé, équal, &c. But to this rule there are several exceptions. These are the principal rules both for accent and quantity in the English tongue.

Etymology or analogy is the third and most considerable part of grammar, as it treats of the nature, kinds, and various accidents and affections of words, which compose the body or substance of a language.

Words are composed (as aforesaid) of one or more syllables, by the sound whereof we convey our sentiments to others, and by this means men are rendered conversable or social beings. Of words, in every speech, there are eight several sorts, viz. (1.) The noun, or name; (2.) pronoun, or personal name; (3.) verb, the word signifying action or passion; (4.) participle; (5.) adverb; (6.) conjunction; (7.) preposition; (8.) interjection. These are called the eight parts of speech; of all which in their order.

A noun is the name of a thing, absolutely, and without regard to person, time or place. Of nouns there are in English the following accidents. (1.) Species; (2.) figure; (3.) quality; (4.) number; (5.) person; (6.) gender; (7.) case; and (8.) comparison.

Species of nouns I consider as fourfold; (1.) Primitive, such as are themselves original, as man, God. Under this head are reckoned interrogatives, as what? who? which? Redditives, as such, this, that. Collectives, as the people, the crowd, the flock, the herd. Numeral nouns, as cardinals, one, two, three, &c. Ordinals, as first, second, third. Partitives, as who-ever, any, either, neither. Universals, as all, every one, none, nobody. Particulars, as some one, any one, each. (2.) Derivative, as human, woman, god-like. Under this head are reckoned verbals, as reading, hearing, offering. Participials, as obedient, apparent, eligible, facile, demonstrative. Gentiles, as Greek, Latin, German, Chinese, English. Patronymics, as Hebrews, Israelites, Ishmaelites, Korathites. Possessives, as servile, regal, paternal. Local nouns, as rural, marine, Oxonian, Parisian. Material nouns,

as

Etymology or analogy, what

Of words, and the eight parts of speech.

The accidents of nouns.

The species of nouns. Primitives.

Derivatives.

- Substantives.** as wooden, stony, ashen. (3.) Substantive nouns are such as regard the substance of things; and are proper to individuals, as Plato, Socrates, Jesus, John; or appellative, which agree to many; as man, stone, fish, fowl, beast, justice, goodness. (4.) Adjective nouns, such as are always joined with substantives, and shew their qualities and affections, as good, bad, high, low, quick, gentle, hard, soft, white, black. To a substantive you cannot add the word thing, but to any adjective you may, as black thing, fine thing, &c.
- The figure of nouns.** The figure of nouns is threefold, simple, compound, and decompound; as soluble, resolvable, irresolvable; passionate, compassionate, incompassionate.
- The quality of nouns.** The quality of nouns is twofold, proper and appellative, both which were considered under the substantives above.
- The numbers of nouns.** The numbers of nouns are two, viz. (1.) Singular, which speaks only of one thing; as father, a stone, a man, a face, an ox, an index. (2.) The plural, which speaks of more than one, or many; as fathers, stones, men, faces, oxen, indices; where you observe great irregularity in forming the plural from the singular; though for the most part 'tis done by adding s to the singular; as field, fields; hat, hats; tree, trees, &c. But if the singular ends in s, se, ze, x, sh, ce, ch, ge, the plural requires es; as lass, lasses; horse, horses; maze, mazes; fox, foxes; fish, fishes; prince, princes; tench, tenches; page, pages. Several names have no singular, as annals, ashes, Alps, bowels, bellows, breeches, scissars, &c. and some have no plural number; as John, wheat, air, blood, beer, lead, brass, prudence, pride, hunger, foot, vulgar, &c.
- The genders of nouns.** The person of nouns will be considered under the second part of speech, pronouns; as most properly belonging thereto. The gender of nouns is twofold, (1.) Masculine, which respects the male, or he-kind; as man, horse, dog; and (2.) feminine, which relates to the female part of animals, or the she-kind; as woman, mare, bitch. These are all the genders the English observe, and indeed all that really are in nature;

nature; for what the Latin calls the neuter, the common, the doubtful, the epicene, are not distinct genders from the masculine and feminine, but only express some quality or affection of them, as is plain to the intelligent reader. In short, all inanimate beings have properly no gender, because no distinction of sexes, or rather no sex at all; and therefore when we speak of them, instead of the generical particles he or she, we use the neutral particle it; as, it was hard, it was high, it felt cold, &c. The English tongue generally expresses different sexes by different words, as above; but some few by different terminations of the same word; as poet, poetess; actor, actress; emperor, empress; count, countess; executor, executrix; administrator, administratrix.

The neuter, common and epicene genders are not properly genders.

The cases of nouns are generally reckoned six; (1.) The nominative, when the name is directly and absolutely put with the preposition a, the; as a king, the king, &c. (2.) The genitive, which has the sign of, as, of a king. (3.) The dative, known by the sign to, as, to the king. (4.) The accusative, which cometh after the verb with the particle the; as, I read the book. (5.) The vocative is that wherein we call or speak to a person; as, O king! Thou villain! (6.) The ablative case is known by some of these prepositions, in, with, through, for, from, by, than, &c. As, from the house, in the heart, &c. I shall subjoin an example of expressions, wherein all the six cases of the word Book are used in the singular and plural number.

The cases of nouns are six. The nominative. Genitive. Dative. Accusative. Vocative. Ablative.

<i>Singularly.</i>	<i>Plurally.</i>	
<i>Nom.</i> There was a book.	There lay the books.	An example of an English noun declin'd.
<i>Gen.</i> The price of the book.	The number of the books.	
<i>Dat.</i> He added to the book.	It gave splendor to the books.	
<i>Accus.</i> He read the book.	They print many books.	
<i>Voc.</i> The poet said, Go, O book.	He said, O choice books!	
<i>Abl.</i> He took it from a book.	He got a great name by books.	

The Latin, Greek, &c. form these cases by different endings of words, which they call declining of nouns; and of these declensions they have five several sorts, not at all to our purpose to take any notice of here.

The

- The comparison of adjectives, what. Three degrees Positive. The comparison of nouns adjectives is that whereby the quality of things is relatively considered; and is therefore said to be of three degrees, viz. (1.) The positive degree, which indeed is not properly any degree of comparison, because it considers not the quality of things comparatively with others, but simply and absolutely as it is in its first state; as, hard, soft, white, black, &c. (2.) The comparative degree is that which expresses the quality of things somewhat increased or diminished; and is formed by adding *er* to the positive; as, harder, softer, whiter, blacker, &c. (3.) The superlative degree is that which expresses the greatest intensity, or utmost degree of the quality of things, and is formed by adding *est* to the positive; as, hardest, softest, whitest, blackest. But in many adjectives there is great irregularity, and entire new words required to express different degrees; as, good, better, best, bad, worse, worst; much, more, most. Also we compare with the words more, most, very, &c. As large, more large, most or very large, &c.
- Comparative.
- Superlative.
- Pronouns how they differ from nouns. Pronouns are reckoned the second part of speech, though in reality they differ not from nouns, save only that they chiefly and primarily signify persons, and, secondarily, things; so that pronouns are only personal nouns or names, and so ought not to be made a distinct part of speech. Of pronouns some be substantive, as, I, thou, he, she; others, adjective, as, mine, thine, his, hers, ours, theirs, &c.
- Substantive and adjective.
- The persons of pronouns. Again, since in discourse whatever is said, is spoke either of ourselves, to another, or of some third person, 'tis necessary there be three persons, which are in each number as here represented.

The Persons.	Before the Verb.		After the Verb.		With a Noun.		Without a Noun.	
	S.	P.	S.	P.	S.	P.	S.	P.
1st Perf.	I	We	Me	Us	My	Our	Mine	Ours
2d Perf.	Thou	Ye	The	You	Thy	Your	Thine	Yours
3d Perf.	Mas. He	} They	Him	} Them	His	} Their	His	} Theirs
	Fem. She		Her		Her		Hers	
	Neut. It		It		Its		Its	

The interrogatives Who, for a person, and What for a thing, make whom after the verb, or in any case but the nominative, and the genitive Plural, whose. This, which refers to somewhat near, and that to somewhat remote, have in their plural number, these and those; and those who would write correct, should never put it's for 'tis, or it is; or say, it's a fault, for it is a fault.

The next and most considerable part of speech is the verb, which signifies being, action, or suffering action; or it is that word in a sentence which expresses what is affirmed or said of things; for which reason verbs are most properly called affirmations.

Verbs are divided into active or passive. The active verb denotes the doing some action, as I love, thou scornest; the passive verb denotes suffering some action; as, I am loved, thou art scorned. Some distinguish the verb active into transitive and intransitive: a transitive verb is that whose action passeth on some other thing; as, he beats the dog. The intransitive verb expresses only mere action in the agent; as, he liveth, he walked.

Verbs are conjugated, or varied by diverse terminations, according to the mood, tense, number, and person thereby implied and designed.

The mood of a verb is that peculiar manner in and by which its action is expressed; and of these moods we may reckon four in the English tongue; as (1.) The indicative mood; which simply indicates, or sheweth its action absolutely; as, I speak, thou hearest, they walk. (2.) The subjunctive mood; in which the verb is subjoined to, or depends on some other verb in the sentence; as, you will be corrected, if you play. This mood is generally reckoned with two others, viz. the potential, when besides the mere affirmation, the power, liberty, will, &c. of the agent is expressed; as, I can read, thou mayest hear, he would run: and the optative mood, which always involves a wish, desire, &c. As, would to God I had learned. (3.) The imperative mood, which commands, exhorts, or intreats; as, read thou, let them hear. (4.) The infinitive mood,

Of the third part of speech, the verb, and the several sorts thereof;

Active.

Passive.

Transitive.

Intransitive.

The conjugation of verbs.

The moods, what.

Indicative.

Subjunctive.

Potential.

Optative.

Imperative.

Infinitive.

mood, which expresses the action of the verb indefinitely, and is known by the particle to; as, to love, to read, to write.

The tenses of a verb, what.

Present.

Preter-imperfect.

Preter-perfect

Preter-pluperfect.

Future.

The persons of verbs, how formed.

Of the auxiliary verb am.

The tenses of verbs are the times in which they exert their action; and they are reckoned five, viz. (1.) The present tense, or time now present while the action is doing; as, I love, thou art loved, they do see. (2.) The preter-imperfect tense, which relates to the time past, and imports the action of the verb then in being, but not finished; as, I did love, viz. then, and do still. (3.) The preter-perfect tense refers to the time perfectly past which belongs to the action; as, I have loved, but (you may add) that's now over. (4.) The preter-pluperfect tense, which refers you to some time which was past before some other time which is also now really past; as, I had heard it, before he sent the news. (5.) The future tense relating to the time to come; as, I shall or will love.

The verbs are varied also in all the three persons in the singular number; to the first person belongs the theme of the verb, as, I love; the second is formed by adding est, as, thou lovest; the third by eth, as, he loveth. The persons in the plural vary not the termination of the first person singular in any of the tenses; as, we love, ye love, &c.

In order to have a clear notion of conjugating English verbs, you must first see the conjugation of the verb am, which is called the auxiliary, or helping verb, because it is altogether used in forming the passive voice of verbs. A paradigm of which here follows in the indicative mood, tenses, numbers, and persons.

INDICA-

INDICATIVE MOOD.

	Singular.			Plural.		
	I	Thou	He	We	Ye	They
<i>Present Tense.</i>	am	art	is	are		
<i>Pret. imperf.</i>	was	wast	was	were		
<i>Preterperf.</i>	have been	hast been	hath been	have been		
<i>Preterpluperf.</i>	had been	hadst been	had been	had been		
<i>Future.</i>	will be	wilt be	will be	will be		

Here follows a Paradigm of the Conjugation of the regular Verb *Love*, in the Active and Passive Voice.

The INDICATIVE MOOD.

	<i>Active Voice.</i>	<i>The PRESENT.</i>	<i>Passive Voice.</i>
<i>Sing.</i>	{ I love or do love. Thou lov'st or do'st love. He loveth or doth love.		{ I am loved. Thou art loved. He is loved.
<i>Plur.</i>	{ We Ye } love or do love. They		{ We Ye } are loved. They

The IMPERFECT.

<i>Sing.</i>	{ I love or did love. Thou loved'st or did'st love. He loved or did love.		{ I was loved. Thou wast loved. He was loved.
<i>Plur.</i>	{ We Ye } loved or did love. They		{ We Ye } were loved. They

The PRETERPERFECT.

<i>Sing.</i>	{ I have loved. Thou hast loved. He hath loved.		{ I have been loved. Thou hast been loved. He hath been loved.
<i>Plur.</i>	{ We Ye } have loved. They		{ We Ye } have been loved. They

Active Voice. The PRETERPLUPERFECT. Passive Voice.

<i>Sing.</i>	{ I had loved.			{ I had been loved.	
	{ Thou had'st loved.			{ Thou had'st been loved.	
	{ He had loved.			{ He had been loved.	
<i>Plur.</i>	{ We }			{ We }	
	{ Ye }			{ Ye }	
	{ They } had loved.			{ They } had been loved.	

The FUTURE.

<i>Sing.</i>	{ I shall or will love.			{ I shall or will be loved.	
	{ Thou shalt or wilt love.			{ Thou shalt or wilt be loved.	
	{ He shall or will love.			{ He shall or will be loved.	
<i>Plur.</i>	{ We }			{ We }	
	{ Ye }			{ Ye }	
	{ They } shall or will love.			{ They } shall or will be loved.	

*The SUBJUNCTIVE MOOD.**The PRESENT.*

<i>Sing.</i>	{ I may or can love.			{ I may or can be loved.	
	{ Thou may'st or can'st love.			{ Thou may'st or can'st be loved.	
	{ He may or can love.			{ He may or can be loved.	
<i>Plur.</i>	{ We }			{ We }	
	{ Ye }			{ Ye }	
	{ They } may or can love.			{ They } may or can be loved.	

The IMPERFECT.

<i>Sing.</i>	{ I might or could love.			{ I might or could be loved.	
	{ Thou might'st or could'st love.			{ Thou might'st or could'st be loved.	
	{ He might or could love.			{ He might or could be loved.	
<i>Plur.</i>	{ We }			{ We }	
	{ Ye }			{ Ye }	
	{ They } might or could love.			{ They } might or could be loved.	

The PRETERPERFECT.

<i>Sing.</i>	{ I may have loved.			{ I may have been loved.	
	{ Thou may'st have loved.			{ Thou may'st have been loved.	
	{ He may have loved.			{ He may have been loved.	
<i>Plur.</i>	{ We }			{ We }	
	{ Ye }			{ Ye }	
	{ They } may have loved.			{ They } may have been loved.	

Active

Active Voice. *The PRETERPLUPERFECT.* *Passive Voice.*

<i>Sing.</i>	{	I might have or had loved.		{	I might have or had been loved.
		Thou mightest have loved.			Thou might'st have been loved.
		He might have loved.			He might have been loved.
<i>Plur.</i>	{	We	}	{	We
		Ye			Ye
		They			They
		might have loved.			might have been loved.

The FUTURE.

<i>Sing.</i>	{	I shall have loved.		{	I shall have been loved.
		Thou shalt have loved.			Thou shalt have been loved.
		He shall have loved.			He shall have been loved.
<i>Plur.</i>	{	We	}	{	We
		Ye			Ye
		They			They
		shall have loved.			shall have been loved.

The IMPERATIVE MOOD.

The PRESENT.

<i>Sing.</i>	{	Love thou, or do thou love.		{	Be thou loved.
		Let him love.			Let him be loved.
<i>Plur.</i>	{	Love ye, or do ye love.		{	Be ye loved.
		Let them love.			Let them be loved.

<i>The INFINITIVE MOOD.</i>	{	<i>Present,</i>	}	To love.
		<i>Perfect,</i>		To have or had loved.
		<i>Future,</i>		To be about to love.

<i>The PARTICIPLES.</i>	{	<i>Active,</i>	}	Loving.
		<i>Passive,</i>		Loved.

Such is the conjugation of a regular verb; which you see is mostly performed with the passive participle loved, and the auxiliary verbs do, have, shall, will, may, can, and am.

As to the participles, they are so called as partaking of the nature of both noun and verb; of the first, as it is a sort of adjective, and may be declined with cases; as loving, of loving, to loving, &c. and it hath tense and signification from the verb. For the active participle loving is of the present, the passive loved

loved of the preterite tense. The active is always formed by adding *ing* to the theme; as *love, loving; read, reading; laugh, laughing*. The passive is mostly formed by adding *ed*, or *d*, to the theme; as *love, loved; burn, burned; laugh, laughed*: but some are irregular in *en*, and *t*; as *rise, risen; take, taken; bit, bitten; give, given; dream, dreamt; mean, meant; weep, wept, &c.* And here observe, that after *c, ch, sh, f, k, p, x*, and sometimes after *s, th*, and *l, m, n, r* (when a short vowel goes before) the *ed* or *d* is changed into *'t*, with or without an apostrophe; as *plac't, snatch't, fish't, wak't, leapt, vex't, smelt, &c.* instead of the better form, *plac'd, chang'd, fish'd, wak'd, leap'd, vex'd, smell'd*; and which were still much better wrote entire, as *placed, snatched, changed, &c.*

Of adverbs,
and their several kinds.

Adverbs make the fifth part of speech; and are such indeclinable words, as being joined to a noun or verb, participle, &c. do express some circumstance, quality, or manner of their signification: and in English generally end in *ly*; as *wisely, happily, greatly, &c.* Adverbs may be reduced to the following heads. (1.) Adverbs of time; as, *now, then, yesterday, lately, presently, to-morrow, when, ever, never, daily, long, often, seldom, again, anon, &c.* (2.) Adverbs of place; as, *where, here, there, within, without, whither, thither, towards, upwards, downwards, the right, the left, whence, thence, hence, above, below, which way? this way, that way, &c.* (3.) Adverbs of number and order; as, *once, twice, thrice; then, thereafter, moreover, so forth, of new, finally, lastly, first, secondly, thirdly, &c.* (4.) Adverbs of the manner, quality, &c. And these are either absolute; as, *simply, well, ill, bravely; truly, verily, certainly; happily, perhaps, no, not; to wit, namely; apart, together; lo! behold! why? whether, &c.* or comparative, as *more, exceedingly; less, hardly, well-nigh; so, alike, as; otherwise, differently, &c.*

Of the sixth
part of speech,
called conjunctions,
and the kinds of
them.

Conjunctions are reckoned the sixth part of speech. These are such particles, or unvariable words, as serve to conjoin words and sentences together, and thereby shew their dependence on one another. Of these there are the following sorts. (1.) Copulatives; as, *and, with;*

with ; neither, nor. (2.) Disjunctives ; as, either, or. (3.) Concessives ; as, though, although, albeit, yet. (4.) Adversatives ; as, but, yet, notwithstanding, nevertheless. (5.) Causals ; as, for because, that. (6.) Illatives ; as, therefore, wherefore, seeing, since. (7.) Finals ; as, that, to that end. (8.) Conditionals ; as, if, provided, if indeed. (9.) Exceptives ; as, unless, except. (10.) Diminutives ; as, at least, only. (11.) Expletives ; as, now, truly, indeed, forsooth. (12.) Declaratives ; as, viz. to wit, namely, &c.

Prepositions are the seventh part of speech ; and, as their name implies, are set before nouns substantives to shew the relation between them, and also the manner, order, cause, time, place, and other circumstances, of nouns and verbs ; as, in, to, through, by, before, behind, after, from, at, against, about, among, for, with, beyond, &c. And besides this separate use of prepositions, they have another, which is to be joined in composition with a vast number of nouns and verbs ; and by this means they create a great variety, and give a peculiar beauty, fluency, and elegance to the language ; as hath been before imitated.

Of the seventh part of speech, called prepositions.

Interjections make the eighth and last part of language ; these are small indeclinable words or particles, which denote the affections and passions of the mind, independently of any other word in the sentence ; as in calling, ho ! soho ! in rejoicing, as, O brave ! Some express grief ; as, ah ! alas ! wo is me ! some wonder ; as, O strange ! indeed ! some praise ; as, well done ! some aversion ; as, away ! phy ! tush ! some surprize ; as, good God ! what ! some fear ; as, ha ! aha ! some silence ; as, hark ! hush ! 'ft ! some derision ; as, avant ! away with ! some imprecation ; as, wo, pox on't ! some wishing ; as, God grant ! would to God ! some deprecation ; as, God forbid !

Of the eighth part of speech, called interjections, and their several kinds.

Concerning all those particles, which make the four last parts of speech, this in general may be observed, that they are very often used interchangeably the one for the other, according to the tenor and exigency of the sentence or expression ; the same word being now an adverb, then a conjunction, sometimes a preposition, at others an interjection ; as is obvious to the eye of

A general observation.

every observant reader. I shall now proceed to the last part of grammar, viz.

Of the fourth
part of gram-
mar, syntaxis.
A sentence,
what,

The syntaxis, or due construction of words in sentences. A sentence is an expression which consisteth at least of two words; as, God is, John readeth; but oftentimes it hath three or more, as, God hateth liars, but his countenance doth always behold the upright. In every sentence there must be found a noun and a verb, the first the subject of which the latter doth affirm something, as, a lie is abominable.

The two parts
of syntaxis,
concord and
government.

The syntaxis, in those tongues which vary the terminations of the nouns and verbs, is divided into two parts, viz. concord and government. Concord is the agreement of words in number, person, gender, case, &c. Government is when one word so governs another, that it causes it to be put into some special case; and therefore, since all cases of English nouns are made by invariable particles, or little words, as before hath been taught, it plainly appears that little syntactical government is to be expected in our tongue, and that 'tis much better taught by the genius thereof, than by the rules of art.

Some rules
for English
concord.

But with regard to concord, somewhat is necessary to be said; since, though in itself so easy, it is so little understood or attended to, in either speaking or writing, amongst common people. Its rules are few and plain, and are as follow. (1.) The particles *a* and *an* must never be set before nouns of the plural number; but the before singular and plural; as, *a* man, *an* horse, the man, the house. (2.) A verb must agree with its noun in number and person, as, *thou* readest, *he* heareth, *we* read. (3.) Two nouns singular, having a conjunction copulative between them, require a plural verb; as, the king and queen reign, not reigns: his justice and goodness were (not was) great. (4.) Nouns of number, or collectives, may have a singular or plural verb, though themselves be singular; as, the mob is, or are, unruly; the parliament is, or are, sitting; part of the nation was, or were, slain. (5.) Any sentence, or matter, being the subject of the verb, requires the verb to be put in the singular number; as, early rising is healthful; to be learned, is very honourable. (6.)

When two nouns of different numbers are connected
in

in a sentence by a verb, the verb generally agreeth in number with the nearest; as, nothing is here wanting but charms: riches are too often a snare to men. The rules of concord between the substantive and adjective, the relative and antecedent, have in our tongue no place.

And when these or any other rules of grammar are transgressed in speaking or writing, such a default is called a solecism, or an impropriety of speech, wherein the expression is rude, uncouth, and barbarous. It is said to be derived from the Soli, a people of Attica in Greece, who being transplanted to Cilicia in Lesser Asia, quite lost the purity of their mother-tongue, and became remarkable, and even a by-saying, for their barbarous pronunciation. Solecism, what. Whence derived.

As syllables are composed of letters, words of syllables, and sentences of words; so periods are composed of sentences, and a discourse of periods. Every period ought to have two compleat sentences, and not to exceed four. And that the period may be just and agreeable, the expressions or particular sentences should not be too long, but such as may render the whole period proportional to the breath of the speaker, and the voice capable of reposing at convenient intervals. Of periods, their nature and composition.

A period therefore cannot consist of less than two sentences or members; for instance, (1.) As the body without the spirit is dead, (2.) so faith without works is dead also. A period of two sentences.

A period of three members may be such as this; (1.) Seeing that by thee we enjoy great quietness, and that very worthy deeds are done unto this nation by thy providence; (2.) we accept it always, and in all places, most noble Felix, with all thankfulness: (3.) yet that I be not further tedious to thee, I pray that thou would'st hear us, of thy clemency, a few words. A period of three members more simple: (1.) In the beginning was God, (2.) and the word was with God, (3.) and the word was God. A period of three sentences.

A period of four sentences or members: (1.) The Father judgeth no man, (2.) but hath committed all judgment to the Son: (3.) that all men should honour the Son, (4.) even as they honour the Father. A period of four sentences.

Of GRAMMAR,

Thus much for the nature of periods in general, which, as they are the parts or members of discourse, so the more equal, proportionate, sententious, and beautiful they are contrived, the more substantial, perfect, elegant, and agreeable will be the oration; and therefore it is a matter of the greatest importance to those that speak in public.

The points or stops used in writing.

In writing we use several stops or pauses, and other marks or characters, which are as follow, viz. The comma (,) which stops the voice while you tell one. The semicolon (;) pauseth while you tell two. The colon (:) while you tell three; and the period, or full stop, (.) while you tell four. They are used in a period according as the sense of each separate member is more complete, and the last or full stop only at the close of the period.

Other marks and characters.

The marks or characters used by writers are these :

- (1.) An interrogation (?) when a question is asked, as, Who?
- (2.) A note of admiration (!) as, Was ever the like seen!
- (3.) An accent (').
- (4.) An apostrophe, (') as, I'll, for, I will.
- (5.) An asterism (*) referring to somewhat in the margin.
- (6.) An obelisk (+) of the same use.
- (7.) A paragraph (§) begins a new head or subject.
- (8.) A section (§) denotes the beginning of a new section.
- (9.) A quotation (") shews a passage quoted from an author.
- (10.) An index, (☞) a hand pointing to somewhat very remarkable.
- (11.) An hyphen, (-) used to separate syllables, as, god-head.
- (12.) A parenthesis () or crotchet [], including one sentence within another.

An alphabetical LIST of ABBREVIATIONS.

- A.** Aulus, Afternoon.
A. B. Artium Baccalau-
 reus, or Batchelor of Arts.
Abp. Archbishop.
Acc^t. Account.
An. Dom. } Anno Domini, i. e. in
A. D. or } the Year of our Lord.
Adm^l. Admiral.
Adm^{rs}. Administrators.
A. M. Artium Magister, Master
 of Arts.
A. R. Anno Regni, in the Year
 of the Reign.
Ast. P. G. Professor of Astrono-
 my at Gresham College.
B. A. See A. B.
Bar. Baronet.
B. D. Batchelor of Divinity.
Bp. Bishop.
B. V. M. Blessed Virgin Mary.
C. Centum, an Hundred.
C. C. C. Corpus Christi College.
Cent. Centum, an Hundred.
Ch. Charles, or Church.
Cl. Clericus, a Clergyman.
Cor. Corollary.
C. P. S. Custos Privati Sigilli,
 Keeper of the Privy-Seal.
Cur. Curtius, Curate.
D. Duke, Dukedom.
D. D. Doctor of Divinity.
Deut. Deuteronomy.
Dit. Ditto, the same.
Do. Ditto.
Dum. Dukedom.
E. Earl.
Earld. Earldom.
E. g. Exempli gratia, for Ex-
 ample.
Eng. English, England.
Ep. Epistle.
Esq; Esquire.
Ev. Evangelist.
Ex. Exodus, Exposition.
Fr. France.
F. R. S. Fellow of the Royal So-
 ciety.
Gen^{mo}. Generalissimo.
Gent. Gentleman.
G. R. Georgius Rex, K. George.
Heb. Hebrew.
Hier. Hieronimus, i. e. Jerom.
Hund. Hundred.
Id. Idem, the same.
i. e. Id est, that is.
I. H. S. Jesus Hominum Salvator,
 Jesus the Saviour of men.
ΙΧΘΥΣ, for **ΙΗΣΟΥ ΧΡΙΣΤΟΥ ΘΕΟΥ ΥΙΟΥ**
ΣΩΤΗΡΟΣ, i. e. Jesus Christ the
 Son of God, the Saviour.
Jac. Jacobus, James.
J. D. Jurum Doctor, i. e. Doc-
 tor of Laws.
Jes^t. Jesuit.
Jn^o. John.
K. King.
K^m. Kingdom.
K^t. Knight.
L. Lord, Lake.
L. or l. Liber, a Book.
Lap. Ladyship.
Ld. Lord.
L. D. Lady-day.
LL. D. Legum Doctor, i. e.
 Doctor of Laws.
Lp. Lordship.
Lr. Letter.
M. Marquis.
M. A. Master of Arts.
Ma. Madam.
Mat^y. Majesty.
Math. Mathematician.

M. D. Medi-

M. D. Medicinæ Doctor, i. e. Doctor of Physic.
M^r. Master.
M^{rs}. Mistress.
MSS. Manuscripts.
M. S. Memorizæ Sacrum, i. e. Sacred to the Memory.
N. Note.
N. B. Nota bene, i. e. Mark well.
N. S. New Style.
O. S. Old Style.
Per Cent. By the Hundred.
Philom. Philomathes, a Lover of Learning.
P. M. G. Professor of Music at Gresham College.
Pr. Priest.
P. S. Postscript.
Q. Queen, Question.
q. Quasi, as it were.
q. d. Quasi dicat, as if he should say.
R. Rex, King; or Regina, Queen.
Reg^t. Regent.
Reg. Prof. Regius Professor, i. e. Royal, or King's Professor.
Rel. Religion.
Rev. Revelation.
Ro. Romans.
R^t. Right.
S^t. Saint.
Serj. Serjeant.
Serv. Servant.
Sh. Shire.
Sol. Solution.
Sr. Sir.
S. S. T. P. Sacro-Sanctæ Theologiæ Professor, A Professor of Divinity.
T. Thomas.
V. Virgin.
v. Vide, i. e. see.
Viz. Videlicet, i. e. that is to say.

Ult. Ultimate, the last.
Wp. Worship.
Xⁿ. Christian.
X^t. Christ.
y^e The.
yⁿ. Then.
y^t. That.
& et, i. e. and.
&c. et cetera, and the rest.

Numerical Abbreviations.

I. One Thousand.
V. Five Thousand.
X. Ten Thousand.
L. Fifty Thousand.
C. A Hundred Thousand.
CC. Two Hundred.
D or IJ. Five Hundred.
DC. Six Hundred.
M. or CIJ. A Thousand.
IJJ. Five Thousand.
CCIJJ. Ten Thousand.
IJJJJ. Fifty Thousand.
MDCCXXXVII. One Thousand Seven Hundred and Thirty Seven.

Latin WORDS explained.

Errata, Errors.
Corrigenda, Things to be corrected.
Addenda, Things to be added.
Mutanda, Things to be altered.
Delenda, Things to be blotted out.
Pro, For.
Lege, Read.
Dele, Blot out, or erase.
Finis, The End.
Imprimis, In the first Place.
Item, Also.

Memorandum,

Memorandum, somewhat to be remembered.

Ibid. Ibidem, In the same Place.

Ipso Facto, In very Deed or Fact.

De Facto, Matter of Fact.

De Jure, Of Right.

Probatum est, It is approved.

Vi & Armis, By Force and Arms.

Jure Divino, By divine Right.

Alias, Otherwise.

Ipse Dixit, Himself says so.

Sizes of Books.

Folio. A book of the largest size, in which a sheet makes two Leaves.

4^{to} Quarto. That in which a sheet makes four Leaves.

8^{vo} Octavo. Having a sheet folded into eight Leaves.

12^{mo} Duodecimo. Having a sheet folded into twelve leaves; and we call it a book in twelves.



Of RHETORIC and ORATORY; or the Art of SPEAKING with ELO- QUENCE and PERSUASION.

Rhetoric de-
fined; how it
differs from
oratory.

RHETORIC is the art or faculty of speaking well and ornamentally on any subject. Or, as Aristotle has defined it, it is the faculty of observing what every subject affords of use to persuasion. This is a general definition, including equally both rhetoric and oratory. For these two differ only as theory and practice; the business of the rhetorician being to lay down rules and precepts for speaking elegantly, and that of the orator to use and apply them commodiously in practice to the purpose of persuasion.

Rhetoric con-
sisteth of four
great parts.
Invention.

Disposition.

Elocution.

Pronunciation

Of invention,
the first part
of rhetoric.

This art doth consist of four great parts. (1.) Invention; which excogitates and finds out such reasons, motives, and arguments, as are adapted to persuade or gain the assent and belief of the hearer or reader. (2.) Disposition; which is the proper and most advantageous placing, disposing, and ranging the arguments and subject-matters before invented in a proper and requisite order and method. (3.) Elocution; which provides a diction enriched and embellished with all the ornaments of proper tropes and figures; and in which chosen words are adapted to express the things invented, with force and energy. (4.) Pronunciation; which regards the delivery of the discourse or oration with an agreeable modulation of the voice, and becoming gesture of the body.

Invention, as was said, is the finding such arguments as are proper to persuade, and gain belief. These arguments are divided into artificial, and in-artificial. The former are the proper object of the invention of him who writes; the latter he borrows from abroad, and accommodates them to his subject.

Of

Of artificial arguments there are three sorts. (1.) Artificial arguments or syllogistical argumentations; which most directly convince the understanding, and effect belief. These are derived from various topics; either such as afford an absolute certainty, and then they become demonstrations: or from ratiocination or reasoning from causes, effects, subjects, adjuncts, kind, species, the whole, the part, and other logical topics: or lastly, from topics of probability and verisimilitude. (2.) Those which we may call the manners, and whereby the orator ingratiates himself with the audience or reader, and conciliates their good opinion or favour. This is promoted by his own manners, as his prudence, wisdom, learning, probity, modesty, &c. Or the manners of the auditors; as their passions, habits, age, fortunes, and stations; to all which he must have a tender critical regard. Or, lastly, the manners of the nation or country; as liberty in a republic; the laws in a democracy; riches in an aristocracy; and the royal prerogatives in a monarchy. (3.) The third kind of arguments are called the passions; their design and use being to excite and move, or else to calm and compose the passions; and nothing concerns an orator more than to acquire a nice judgment and skill in affecting the passions, and striking them singly as he would. Without the pathetic, even the justest reasoning, though supported by sound learning, will appear a cold, lifeless, and uninteresting harangue.

The inartificial arguments are not the effects of the orator's art, but he takes them from divers topics elsewhere; as from the Scriptures; the testimonies of ancient and modern authors; common and received opinions, proverbs, and sentences; from oaths, writings, laws, contracts, witnesses, signs and seals, and abundance of other circumstances, all which an orator ought to be well acquainted with.

The topics of artificial arguments are either general or special: general topics are the store-houses of arguments, common to all kinds of subjects or causes; and are by the learned Vossius determined to be two in number, viz. (1.) Possible or impossible; for whether we design to persuade or dissuade, to praise or dispraise, accuse

Artificial arguments of three sorts.

Reasons or argumentations.

The manners.

The passions.

Of inartificial arguments.

The topics of artificial arguments, general and special. The general of two sorts; possible or impossible.

Or great and small.

accuse or defend, we must always prove the fact or subject has been, or is, possible or impossible to be. (2.) Great and small is the other title of general topics; and to this all comparisons relate. As when we shew, this is more or less beneficial or pernicious, more useful or unuseful, more honourable or dishonourable, more just and equitable, or unjust and illegal, than that.

Special topics.

Of the three kinds of subjects.

The demonstrative.
The deliberative.
The judicial.
The purpose and end of each.

Special topics are such feats or heads of arguments as are proper to particular subjects and causes; and for that reason vary according to their variety.

Of causes or subjects of oratory, there are three kinds. (1.) The demonstrative; (2.) The deliberative; and (3.) The judicial. The demonstrative kind praises or dispraises; the deliberative persuades or dissuades; and the judicial accuses or defends. And all a man can speak or write must be recommended to the hearer or reader in one of these three ways. The purpose of the demonstrative kind, is honour or shame; and its end, to render the person, or thing, lovely or detestable. The purpose of the deliberative is profit and advantage, and the contrary; and its end, hope or fear. The judicial kind pursues equity and right; and hath in view, clemency or severity.

Orations of the demonstrative kind, threefold.
Those of persons.

The subjects of this kind of praise or dispraise.

Orations or discourses of the demonstrative kind, or such as praise or dispraise, are of three several kinds; as (1.) Those which concern persons, real or imaginary; (2.) Those which are conversant about facts or deeds; and (3.) Those which relate to things.

Oratorical discourses concerning the praise or dispraise of persons, are spent chiefly on the following topics, viz. (1.) On considering and expatiating on some very remarkable and distinguishing circumstances of the person; as the prodigies, prophecies, oracles, &c. (if any) which preceded his birth: the notable adjuncts of his birth, if any: his native country: his stock or lineage: his sex: his education, learning, studies, counsels, and exploits, and all other circumstances attending every stage of his life: his death, the manner, and events thereof: the funeral solemnities, &c. (2.) The next topic of discourse is the various

various fortune of the person, in respect of riches, poverty, honours and dignity: his friends, relatives, and children. (3.) The accidents of his body; as health, strength, robustness, activity, beauty, and form. (4.) The endowments and qualities of his mind; as wit, ingenuity, judgment, docility, memory, &c. (5.) His manners and habits, with regard to virtue and vice; where every virtue conspicuous in his life is taken notice of, and recommended; and every vicious habit dispraised and declaimed. In all declamations of this sort, care should be taken, that we do not ascribe to the person undue praise; nor such as is common to many, and not singularly his own;—and lastly, that we dwell not too long on the praises of light and trifling things.

The second sort of declamations of the demonstrative kind, are those which relate to the praise of facts and deeds. The topics whence materials for amplifying and setting off this kind of subject are deduced, are such as these; (1.) That the action was honourable, and becoming the person. (2.) That it was legal, and consentaneous to the laws. (3.) That it was just and righteous with respect to God and man. (4.) That it was glorious, and procured the author fame and reputation. (5.) That it was useful in procuring some very considerable good, or in averting some imminent and dangerous evil. (6.) That it was an enterprize of difficulty, and attended with great labour and expence, and atchieved in a short time. (7.) The circumstances of the person, and manner of the action; as that he did it either first, or alone, or with few, or principally; or at a most necessary exigence of time, place, or juncture of affairs; or often; or that the action has a regard to the honour and benefit of the city and country; or that thereby new honours, dignity, power, &c. first accrued to his country. All which it behoves the orator to examine and apply.

Those which relate to facts, and the topics peculiar thereto.

The third subject of praise are things; of which we may reckon two sorts. (1.) Places; as regions, or countries, and cities; concerning which we observe their origin, antiquity, extent, situation, fertility, produce, the inhabitants, the founders of cities, their governors and rulers, the laws; and every other thing

Those which relate to things, as places.

Habits of the mind.

thing which may contribute any thing of national or civil glory. (2.) The habits of the mind, the manners, and the various acquisitions of learning and science, when in themselves and absolutely considered. These afford a copious theme; nothing being more obviously praise-worthy than virtue and learning; and vice and ignorance claim the greatest abhorrence among detestable things.

Of the deliberative kind of subjects, or causes, which persuade or dissuade.

The second kind of discourse or subject of oratory, is the deliberative, or that which persuades or dissuades. When the orator enters on a subject or discourse of this kind, he must well consider every thing that may render the subject-matter eligible or odious to the audience; and scrutinize every topic from whence motives, reasons and arguments, may be drawn, to effect the same.

The subject-matter thereof, and its several kinds.

The subject or matter of these deliberative orations, are all things which happen, and are posited in our power, whether of a private or public capacity. Those subjects which have regard to a public capacity, are (1.) Funds, revenues, and pecuniary matters. (2.) Peace or war. (3.) Garrisons or forces, which are the defence of countries. (4.) Trade and commerce of all sorts. (5.) The proposal of laws to be established or abrogated. Subjects of a private concernment are whatever may be of advantage or detriment to particulars.

The topics of arguments.

The topics from which motives, reasons and arguments, are to be drawn under this second great part, are counted these eight. (1.) The honourable; which it borrows from the foregoing demonstrative kind. (2.) The profitable or beneficial; which is peculiar to this kind. (3.) The necessary; that it cannot be otherwise, or without which we cannot be safe. (4.) The delightful; that it conduces to the pleasure and delectation of the body or mind, or of both. (5.) The possible; that it may be easily done: this it takes from the foregoing general heads. (6.) The rightful or legal, which it borrows from the next judicial kind. (7.) The event; the advantage of which is argued by way of dilemma; let the matter fall as it will, we shall obtain the benefit and glory intended. (8.) Dialectical, or those borrowed of its sister-science logic; when

we

we reason from the subject itself; the adjuncts; the effects; the antecedent, present, and subsequent circumstances; comparison from the greater, the lesser, and its contrary; from testimony; and above all other topics, most powerfully and efficaciously from examples, when they are very apposite and congruous. But then care should be taken, that they do not wholly engross the oration.

The last kind of subject of the oratorical art is the judicial or juridical, whose province it is to accuse or defend; and heads or topics of arguments or proofs in this vary according to the variety of the state of the cause which is the subject of our accusation or defence. There are four states. (1.) The conjectural state, which enquires whether the fact or case be so, or not. (2.) The definitive state, which enquireth of what denomination the matter is. (3.) The state of quality, which examines the nature of the cause; and (4.) The state of quantity, which is concerned about the magnitude of the crime or fact. Every speech or oration of this juridical kind, has one or more of these four states.

Of the judicial kind of subjects, which accuse or defend.

The several states of the cause.

The state of conjecture has three topics to consult for argument and proof. (1.) The will; which contains the impulsive cause or motives; as the passions and affections, viz. anger, hatred, envy, avarice, &c. Or, ratiocination, i. e. reasoning from hope of advantage or fear of evil, &c. (2.) The faculty or power of doing the fact; and hitherto relates the occasion, strength of body, inclination, hopes of concealing the matter, or impunity, with various circumstances of the matter, as time, place, &c. (3.) The signs or tokens of the thing; of which some precede, some attend, and some follow the fact; as absconding, trepidation or shaking, stammering speech, dejection or confusion in the countenance, &c.

The state of conjecture.

In the definitive state, or that in which we enquire by what name to call the fact, we must define according to the genuine and common sense and force of the word; and confirm our own definition, and confute that of the adversary. As when a thief shall alledge, that indeed he did take, but not steal, such or such goods; or, that he did steal, but it was not

The definitive state.

facrilege; or a person, that he did strike another, but it was no assault and battery, &c. In all such cases the nature of the fact must be defined, and the adversary confuted on that head, by a confirmation of your own definition.

The state of
quality.
Negotial.

Juridicial,
which is ra-
tional or legal.

The state of quality, or that which enquires into the nature of the fact, crime, or cause, is twofold. (1.) Negotial, or that which negotiates affairs which are to come, which therefore belong to the deliberative subject before treated of; or, (2.) juridicial, and is therefore proper to this head. This again is subdivided into rational or legal. The rational also is either absolute, as when we simply defend the fact, and assert it laudably done, and that in respect of nature, law, custom, right, equity, covenant, &c. or assumptive, which is when the defence being weak, is supported by something foreign to or assumed out of the cause; as (1.) By comparison, when we shew that one of two things was necessary to be done, and that this was more just and eligible than the other. (2.) By relation, when we throw the fault on him who has received the injury. (3.) By removing, which is when we throw the fault on some other person or thing not subject to the court, or its jurisdiction; as on the law. (4.) By concession; which is either by purgation, when we defend not the fact, but the will and intention; and say it happened purely through necessity, fortune, ignorance, or imprudence: or deprecation; when we plead guilty, and intreat pity and mercy.

Of the legal
state.

The legal state is conversant about the sense of the laws, statutes, and written authorities; and the nature of the crime is thereby scrutinized; and this kind hath five species: as (1.) The contrariety of the law; when it is either contrary to itself, or some other law. (2.) The written letter, and intention, when the will of the writer seems to disagree with the letter; and here equity and the rigour of the law contend. (3.) Ratiocination; when from what is written, we gather another thing that is not written, because founded on the same reason. (4.) The ambiguity of the discourse; which arises from the various meaning of the word dubious, accent, division of the diction,

diction, &c. (5.) Translation; when we except against the accuser, the judge, the place, the time, the illegality of the indictment, &c. and therefore desire it may be altered and changed.

The state of quantity, or that which enquires into the magnitude or greatness of the crime, examines and informs us which are the greatest and most heinous injuries, and which are the least. They are shewn to be great, (1.) in respect of the slight grounds or provocation. (2.) The great detriment which follows in consequence thereof. (3.) Or the circumstances of the sufferer, as that he was a man of great merit, name, &c. and that the damage is irreparable. (4.) Or of the agent; as that he was the first, the only one who did it; or with a few, or often, &c. (5.) In respect of the adjuncts; as if the injury was done designedly; if it proceeded from an ungrateful mind; if it be complicated of many particular injuries, &c. (6.) In regard of the law which is violated; as the law of nature, the law of the land, a municipal law, &c. the violation of all which is greater or less respectively. Having thus given a cursory view of the first part of the art of rhetoric, invention; we proceed to do the like of the second great part, called

The state of quantity.

Disposition; this is a very important division, and ought to be perfectly mastered by an orator: for though we may sometimes observe a very notable faculty of invention and utterance, even among the vulgar and barbarous; yet the art of disposing the matter invented, aptly, commodiously, variously, and in a requisite and genuine method, is granted only to the learned and skilful.

Of the second great part, disposition.

There are by some reckoned four, by some six general parts of disposition. (1.) The exordium, or beginning or opening of the discourse. (2.) The narration. (3.) The proposition. (4.) The confirmation. (5.) Confutation. (6.) The peroration or conclusion. This is said to be the natural order of the parts of an oration; but when the nature and cause requires us to depart therefrom, and chuse some other, this latter is said to be artificial.

Its several parts or subdivisions.

The exordium, or the beginnings of orations, what they should be, and effect.

In an honourable cause.

In a dishonourable one.

In a dubious or doubtful cause.

If obscure and difficult.

Of the narration, and its properties.

In the exordium or beginning of the discourse, the orator sets forth the aim and scope of what he has to say, and then prepares the minds of the hearers for due attention to the sequel. If the cause be honourable, then the benevolence, attention, and docility of the hearers, are naturally supposed ready and prepared, without any artifice necessary to obtain them.

In a dishonourable cause, we must use a method of insinuation, to ingratiate ourselves with the audience, and thus subtilly conciliate to us a patient hearing. If the cause be dubious or doubtful, the orator prudently proceeds from that face of it, which is best and honourable. If the cause be mean and low, it ought to be elevated and magnified to the hearers, by mentioning some considerable advantages, and honourable circumstances, which will attend or follow it, and so render it worthy their regard and attention. In an obscure and difficult cause, he must artfully insinuate into their minds a desire and willingness to be informed and instructed. The conduct is not the same in the exordium of all discourses, but is deduced from the topics of arguments proper thereto, whether it be of the deliberative, demonstrative, or the judicial kind.

The narration is a recital of the things done, or that seem to be done, adapted to persuasion. This is not always a necessary part, and has little place in the deliberative subject, as also in the judicial, except when we do not agree with the adversary about the manner of the fact. The narration ought to be (1.) Perspicuous; in proper and usual words, that it may be understood. (2.) Likely or probable, and therefore agreeable to nature, law, and the manners of the person; and also to the common rumour and opinion, that it may be believed. (3.) It must be pleasant and delightful, as containing things new, unexpected, great, weighty, and happy events. (4.) It should be short and brief, the matter not far-fetched, nor foreign to the kind of subject, yet so compleat, that nothing be wanting. The narration also must be shorter for the defendant than plaintiff. After the narration, sometimes a place is allowed to a moderate digression, when it can be aptly and opportunely made,

made, which must be either for amplification or moving the passions.

The proposition is that part of the discourse wherein the orator proposes the sum of the whole speech or oration; and if the cause hath many states, the proposition will be either (1.) Simple; wherein the sum and state of the whole cause is briefly propounded. (2.) Separation; this has place only in the judicial state, wherein we lay open in what we agree with our adversary, and what yet remains in controversy. (3.) Partition; this is used in all kinds of subjects; therein we enumerate the several heads and kinds of things of which we are about to speak, and in the same order as we intend to proceed. The beauty of the partition is, that it be full, distinct, plain, certain, and short, containing not more than three, or, at most, than four parts.

Of the proposition and its particulars.

The heads of discourse being distinctly proposed, the orator next proceeds to treat of them according to their nature and kind; and his main design is here the confirmation of his position or propositions; to that end he thoroughly scans every topic of reasoning or argumentation; and having made a collection which he judges sufficient for his purpose, he places them in the most advantageous manner, and applies them with all the force of art and judgment to establish and confirm what he has advanced and asserted. In his conduct in this part of the oration, he observes the following general rules. (1.) If the matter be capable of abundant proof and reasoning, and his topics all pregnant with arguments, yet he prudently avoids luxury even in reason, and chuses the fewest that will suffice; since nothing is more silly and irksome than to overdo any thing. (2.) If the cause be barren in topics, and those too infertile ones, he uses the greatest diligence, parsimony, and art, to improve and make the best of them. And therefore, (3.) he places in the front the strongest arguments, when the minds of the hearers are fired with the greatest expectation and attention. The middle is employed with arguments of the weaker sort, that their number (instead of force) may render them of seeming importance. Lastly, he makes a reserve of some of the most

Of confirmation, and what is observable relating thereto.

forcible reasons to bring up the rear; being conscious that what the audience hear last, makes the greatest impression. (4.) If the strength of the cause depends on an argument that is alien to it, he forthwith endeavours to naturalize it, and make it appear proper thereto. (5.) The bulwarks of his cause are chiefly those argumentations drawn from just syllogisms, enthymems, inductions, and examples; the nature and use of all which you'll find explained in the next chapter of logic.

Of confutation, and the method thereof.

Confutation of course follows confirmation: for the orator is not supposed to have done his business by confirming his own doctrine only; but 'tis expected he should also confute his adversary's notions, and shew them false or more unreasonable than his own. In order to this, (1.) He observes that his antagonist has taken for granted, what is not proved. (2.) Or, that he has assumed from true, things really false. (3.) Or, that he infers what is not, or more than is contained in the argument, if granted. (4.) Or, that his arguments are foreign to the cause, and so of no force. (5.) Or, he retorts the force of his own reasons on himself, and refels him with his own weapons. (6.) Or, he advances arguments equally strong, and, if he can, of more force and energy than his enemy's. (7.) Or, he will artfully debase, laugh at, or undervalue his opponent's arguments; though this be not a fair and honourable way of confuting. (8.) He contrives how he may first invalidate and demolish the strongest pillars of his adversary's hold, that so the whole fabric may fall at once upon him, and crush him.

The peroration or conclusion, and its parts.
Anacephalæosis.

The peroration, epilogue, or conclusion, is the last and finishing part of disposition. The conclusion has generally two parts: (1.) Anacephalæosis or recapitulation, or enumeration of the principal arguments, in which the strength of the cause doth mainly consist, and ought therefore to be fixed in the minds of the hearers; but care must be taken that they be repeated with weight and energy, and the expressions and figures varied, that they may not seem a mere crambo recocata. (2.) The other part is the pathopœia, or method of moving the affections; to this end, the most powerful and

Pathopœia.

and affecting strains of eloquence must be used, and all the art and judgment the orator is master of must here be employed, to move and excite the passions. In short, all the fountains of oratory must here be opened, and the jets d'eloquence made to play upon the reason and affections of the audience; yet this part must always be so managed, as never to want brevity and vehemence.

Elocution, or the language or diction, is the third great part of rhetoric or oratory. This is the noble part which furnishes proper and graceful words, and adapts them to the just expression of the things we have invented. It consists therefore of three parts; (1.) Elegance, the foundation of this structure. (2.) Composition, which is the compages thereof. (3.) Dignity; this embellishes the whole with the ornaments of tropes and figures, and gives it grace and solemnity.

Elegance consists of two parts, (1.) Purity of language, which is, that the words be genuine or free, of our tongue, not foreign; that they are in use among those who understand the language well; that they be not obsolete, or out of use; that they be not low and mean, more proper for the mob, or rustic, than an orator. The phraseology should be strictly grammatical, to avoid rusticity and solecism. (2.) Perspicuity; this is a most important point, and is maintained by plain and usual words; such as are free from ambiguity, or various meanings; such as are well understood, not obsolete or too learned; by avoiding too long, and too short and abrupt sentences; and keeping to a uniform method of discourse, wherein the expressions are duly connected, the dependence evident, and the order of persons, times and things, natural and unconfused. In short, elegance is gained by reading the best and most polite authors, by keeping the best company, and by study and practice.

Composition respects the juncture or connection, order, period, and number, of the syllables, words, and sentences of a discourse. (1.) The connection of syllables and words renders the style soft and smooth, gentle and flowing, sweet and sonorous: to this end the collision, or meeting, of too many vowels or consonants

Of the third great part, elocution, and its parts.

Of elegance, and wherein it consisteth. Purity.

Perspicuity.

Of composition and its parts. Connection.

- Order.** Sonants must be avoided; and if a word ends in a consonant, the following should begin with a vowel. (2.) As to order, we should always proceed from the low and humble, to the grave and noble; that we give precedence to those things which are first in nature or dignity, as day and night, men and women, east and west, &c. (3.) What relates to the periods has been already treated of, at the end of the chapter on grammar. (4.) And as for number, that relating to the measure or quantity of syllables, is of a poetical consideration, and must be learned from that art in the chapter next but one following.
- Period.**
- Number.**
- Of dignity, what it is.** Dignity is that part of elocution, which teaches to speak floridly and ornamentally, with tropes and figures, and very apt and becomingly.
- Tropes, what.** A trope regards words, and is an elegant turning of a word from its proper and genuine signification to another. In tropes we may consider, (1.) The species of them, or proper tropes, which are four, viz. metaphor, metonymy, synecdoche, and irony. (2.) The affections of tropes, or such qualities as affect the aforesaid tropes with an additional grace and ornament: these are four, viz. catachresis, hyperbole, metalepsis, and allegory. (3.) Some other changes of words, like to tropes, but which are not properly such. These are ten, viz. antonomasia, litotes, onomatopœia, antiphrasis, charientism, asteism, diasymus, sarcasm, paroemia or proverb, and ænigma. Of all these I shall give a definition and instances, as I find them in verse, in a little book, called Troposchematology, with small variation.
- The species.**
- The affections of tropes.**
- Improper tropes.**
- A Metaphor or translation.** In place of proper words, a Metaphor puts the resemblance. How the waves do roar!
The fields do laugh and sing: did you behold
Their light'ning steel? Virtue now waxeth cold.
- A Metonymy, or a changing the name of one thing for another.** A Metonymy does new names impose.
Th' inventor's; plump and ruddy Bacchus grows.
Or th' author's; lofty Statius, Virgil read.
Or th' instrument; his tongue defends his head.
Or th' matter whence 'tis moulded; he shall kneel
An humble suitor to thy conqu'ring steel.

Or the effect; pale famine and cold death
Attend on bloody war's infectious breath.
The subject that contains; we surfeited
On many dishes lately, now we're fed
With England's tears; our pulpits long exclaim'd
Against those days, yet ne'er a heart was tam'd.
Or th' adjunct that attends: now you may see
The mace is coming. What an age are we!

Synecdoche a thing complete confounds
With part on't: th' orator with tropes abounds:
Or takes the part for all: so many springs
I've dwelt within this roof. Dear soul, she sings.

Synecdoche.
or compre-
hension.

An Irony speaks one thing, means another.
Well done good guide: kind tender-hearted brother.

An Irony.

Catachresis the sense of words does strain.
You threaten fair! Winds ride upon the main.

Catachresis.

Hyperbole soars* high, or creeps too low||:
He touch'd the* skies: a snail don't crawl so slow.

An Hyperbole
is twofold.
Meiosis, ||
Auxesis,*
Metalepsis.

Two tropes in one does Metalepsis yield.
The clouds drop fatness: Tyber won the field.

An Allegory useth many tropes.
I've past the shoals, now fair gales spread my hopes.

An Allegory.

Antonomasy gives new names. The poet
Chanted Pelides' worth, that men might know it.

Antonomasy.

Litotes does more sense than words include.
I'll not refuse your gifts: he's not so rude.

Litotes.

Onomatopœia coins a word from's sound.
The flies do buzze: tantarra's fill the round.

Onomatopœia

Antiphrasis makes words to disagree
From sense. The speaker's dumb: the* Euxine sea,

Antiphrasis.
*i. e. hospi-
table.

Charientism, for harsh, soft words does use.
Be not so angry: heaven send better news!

Charientism.

Asteism

- Asteism.** *Asteism is a witty jest. Who knew it?
The woman's old, yet ne'er a tooth to shew it.*
- Diasyrmus.** *A living enemy Diasyrmus jeers.
This raven sings: the music of the spheres.*
- Sarcasm.** *Sarcasm stings the flesh, with jeers does kill.
Cyrus, thy thirst was blood; now drink thy fill.*
- Parœmia.** *Parœmia's but a proverb. 'Tis too late,
After the steed is stol'n, to shut the gate.*
- Ænigma.** *Ænigma is a riddle: what 'tis, explain:
Four-legg'd i'th' morn; noon, two; night, three: a man.*
- Of the figures of words and sentences.** *Having passed through the tropes, we next proceed to the figures or finery of speech; of these, some regard words, others sentences. The figures of words are fifteen; the first eleven are of the same sound, the other four of a like sound.*
- Antanaclassis.** *Antanaclassis in one word does hide
Two senses. Come on, if we ride, let's ride.*
- Ploce.** *Ploce repeats a proper name in sense
That's common. Irus grew an Irus hence.*
- Anaphora.** *Anaphora gives more sentences one head.
Peace crowns our life: peace does our plenty breed.*
- Epistrophe.** *Epistrophe concludes alike. Be wise
In your advice: take time in your advice.*
- Symploce.** *Symploce joins both the two last together,
And from both join'd makes up itself another.
Justice came down from heaven to view the earth,
Justice climb'd back to heaven, and left the earth.*
- Epanalepsis.** *Epanalepsis ends as it begins.
Sins stain thy beauteous soul, forsake thy sins.*
- Anadiplosis.** *Anadiplosis ends the former line
With what the next begins. 'Tis the first sign*

Of virtue, if it flies the steps of vice;
Vice, which to mischief does the soul entice.

Epanodos inverts what it repeats. Epanodos.

Meat's for the belly, the belly not for meats.

He bow'd, he fell: bowing, he fell down dead;

He there lay still, where he bow'd down his head.

The same word Epizeuxis twice repeats.

Ah poor, poor swain! me, wretched me, he beats!

Epizeuxis.

Climax ascends by steps. Folly breeds laughter,

Laughter disdain, disdain makes shame her daughter.

Climax.

In Polypoton words the cases change.

For knave to catch a knave is nothing strange.

Polypoton.

Paregmenon does words deriv'd recite.

Of friendship friendly to my friend I write.

Paregmenon.

Paronomasia alludes to th' meaning where

The letters change. Not friends but fiends were here.

Paronomasia.

Homoioteleuton with like sounds does end.

Amend, to virtue bend, and love thy friend.

Homoioteleuton.

One syllable twice Parechesis sets.

Our mis-chief chief-ly li-berty begets.

Parechesis.

We come now to the figures of sentences, and Of the figures
they are of four kinds, viz. (1.) Such as pertain to of sentences.
the explication. (2.) To probation or confirmation.
(3.) To amplification. And (4.) To arguments proper
to excite the passions. Of the first sort are the
following six.

Hypotyposis to your eye contracts

Things, places, persons, times, affections, acts,

Hypotyposis.

Paradiastole crossing does explain.

They change their soil, not minds, who plow the
[main.

Paradiastole.

Antimetabole

Antimetabole. Antimetabole puts chang'd words agen.
Kings before men are gods, 'fore gods are men.

Enantiosis. Enantiosis poiseeth different things.
Money care, truth foes, and flatt'ry friendship brings,

Synœceiosis. Synœceiosis to one subject gives
Two contraries. He's dead, ev'n whilst he lives.

Oxymoron. In Oxymoron contradictions meet.
The honey-gall of love, this bitter-sweet.

Figures of probation. Figures pertaining to probation or confirmation, are the following four.

Ætiology. Ætiology gives every theme a reason.
Speak little : who speaks much, speaks out of season.

Inversion. Inversion makes the adversary's plea
Our best defence. Sir, you'd not say me nay,
But that I am a stranger, (Answer) Pray forbear ;
They who know more of you, trust less, I fear.

Prolepsis. Prolepsis your objections doth prevent
With answers. But, you'll say, pleasures were sent
To wing the soul : true, yet she'll soar so high
On those false wings, she'll scorch herself and die.

Epitrope. Epitrope gives leave, or else dissembles.
Go take your course : I will not stop your rambles.

Figures of amplification. Now follow the figures of amplification.

Incrementum. From low beginnings Incrementum rises
T' a loftier pitch. Could hell forbear these vices,
Nor gape to swallow them? Could th' earth endure
Their footsteps? Is the air grown so impure
To give them breath? Can heaven behold their riot
With patient eyes? Or can the gods be quiet?

Synonymy. Synonymies with divers words declare
One matter. He's alive, he breathes the air.

Syna-

Synathroefm heaps divers things together.
Thief, taylor, miller, weaver; chuse you whether.

Synathroefm.

Periphrasis a copious strain induces
T' express one word. *The father of the Muses.

Periphrasis.
* For Homer.

Hendyades puts two substances for one.
He is advanc'd to ivory and a throne.

Hendyades.

What Erotesis knows full well, it asks.
Was ever virtue put to harder tasks?

Erotesis.

The mind's intent is rais'd by Exclamation.
Alas the day! Oh most corrupted nation!

Exclamation.

Epiphonema makes a final clause.
Such care's requir'd, that men observe the laws.

Epiphonema.

Epanorthosis does words past correct.
Most brave! brave, said I? most heroic act!

Epanorthosis:

Aposiopesis leaves imperfect sense.
I'll teach you — yet I would avoid offence.

Aposiopesis.

Anacœnosis tries another's mind.
But were you here, what comfort would you find?

Anacœnosis:

In words and actions Aporia doubts.
What then? Shall I reply, or take her flouts?

Aporia.

Prosopopœia feigneth things to speak.
The country cries, Why should your discord break
My long-continu'd joys? O heavens, hear
My plaints! Grim death will call him hence, I fear.

Prosopopœia.

Apostrophe turns from the first discourse.
She's dead; did e'er the fates yet feel remorse?

Apostrophe.

I shall now add some grammatical figures of ortho- Grammatical
graphy, put into verse also by the same ingenious figures of
author. Of these are the following eight. orthography.

Prosthesis

- Prosthesis.** Prosthesis adds to th' first part of a word.
Yclad in armour, and begirt with sword.
- Aphæresis.** Aphæresis takes away what t'other gave.
He'll speak you fair, yet 'truth he's but a knave.
- Epenthesis.** Epenthesis does to the middle add.
Go, black-a-moor, and curse the daring lad.
- Syncope.** Syncope from the middle steals a cut.
Thus presbyter in Prester close is shut.
- Paragoge.** By Paragoge something's put to th' end.
Thus (e) abounds in lovee, learne, feare, and friende.
- Apocope.** Apocope for haste the end doth spill.
Thus Thomas we call Tom, and William Will.
- Antithesis.** Antithesis changes vowels th'one for t'other.
A steny heart twa brethren dear to smother.
- Metathesis.** Matathesis the letter's place in words
Doth change. As brunt for burnt, and cruds for curds.
- Figures of syntaxis.** The following are figures of syntaxis in excess.
- Pleonasm.** In Pleonasm superfluous words abound.
Mine eyes did see't; mine ears did hear the sound.
- Poly syndeton.** In Poly syndeton, conjunctions flow.
Both lives, and states, and hopes to thee we owe.
- Parenthesis.** Parenthesis is independent sense
Clapt in. Astræa's fled (fly joys) from hence.
- Parecce.** Parecce to the end puts more than needs.
He must be fat: see! ever-more he feeds.

Figures of syntaxis in defect.

- Ellipsis.** Words in Ellipsis must be understood.
'Tis one, why stay'st? Six in the hundred: good!

One word to more, in Zeugma, is referr'd.
All whiff; nor leaves, nor reed by wind is stirr'd.

Zeugma.

Syllepsis puts two different things together,
And yet at all no difference there is whether
Shall rule. For Thou give place to I, and He to both:
And She to Him obedience pays, though loth.

Syllepsis.

Prolepsis set all first, and then each part.
They look, and wound the one the other's heart.

Prolepsis.

Afyndeton the cop'latives denies.
Faith, justice, truth, religion, mercy dies.

Afyndeton.

The figures in the body or contexture of the period,
are such as follow. Figures in the
context.

Words by Hyperbaton in order run
Disturb'd. Wealth, which the old man for his son
Had rak'd and scrap'd together, now the boy
Doth perriwig and pantaloon away.

Hyperbaton.

Hysteron-Proteron puts the last word first.
Here he was bred and born, brought up and nurs'd.

Hysteron-
Proteron.

Hypallage words in places chang'd doth set.
Cups which I never mov'd my lips to yet.

Hypallage.

'Tis Hellenism when we imitate
The Grecian style. Thus Spencer trots in state:
" For not to have been dipt in Lethe lake
" Could save the son of Thetis from to die;
" But that blind bard did him immortal make,
" With verses dipt in dew of Castalie.

Hellenism.

Tmesis between the words broke puts others in.
What gloss foe'er he puts on't, 'tis a sin.

Tmesis.

Hyphen does words to one another tie.
The sun-burnt clown, the ever-chatt'ring pie.

Hyphen.

Enallage changes person, number, tense,
Gender and mood, at will. See yonder whencee

Enallage.

A troop

A troop appears : unless they march apace :
See herè's your horse, ne'er fear, we've won the race.

Antimeria. Antimeria for one part puts another.
He's new come home ; your say'll not save your brother.

Anastrophe. Anastrophe puts last what first should go.
This is the fault which I was subject to.

Synthesis. Synthesis minds not words, but any ways
Speaks sense. The moor-hen treads, the wood-cock
[lays.

Evocation. By Evocation the third person's made
To yield to first or second. Thou, a blade,
Forget'st thy nest. I, yet no aged man,
Remember since thy father froth'd the can.

Conclusion of the third part. Thus you have, as it were in a synopsis, a view of all the gay and beauteous flowers which grow in the garden of the muses. From hence the orator gathers the ornaments which embellish his orations, and make them not only fragrant, florid, and engaging ; but rich, magnificent, and sublime : such which charm the ear, illuminate truth, dispel error, convince the understanding, and command assent.

Of the fourth and last great part, pronounciation, wherein it does consist. We are now arrived to the last great part or division of the rhetorical art, viz. pronounciation ; this is an apt and due configuration or conformation of the voice and gestures, according to the nature of words and things. Of this the memory is the chief foundation : for unless a person be able to discourse by memory, or extempore, much of the force and grace of pronounciation or utterance will inevitably be lost. And he who stands erect, and hath his body at perfect liberty, so as to be able to humour all the gestures freely, and put himself in any kind of motion, can certainly speak with a more natural, free, easy, and becoming air, than they who are stiffly tied down to a written oration. The latter indeed often utter most sense, have the most correct method, and the best ratiocination ; but the other never fail to be far more agreeable and engaging. That the pronounciation be just, a clear, articulate, even, gentle, and various voice, is necessary ; unaffected,

affected, free from all enthusiastic tone and whining; that it rise and descend, be extended and remitted, according to the number of people, or the nature of the subject shall require. As to the gestures of the body, and its parts, they ought to be manly, rational, and graceful; the body erect and strait, and apt for easy flexure on either side; the countenance of the face pleasant and sad, and variously expressive of the passions, as the exigency of things requires; but always natural, and free from affected, puritanical airs, and all fanatic grimace and contortions, as of one possessed. The head should stand right upon the shoulders; the neck free and easy of motion; the shoulders not hoisted or shrugged up; the arms not projected but in vehement affections of joy, grief, &c. the hand gently moved from the left breast, and falling to the right side. To stamp with the feet is permitted only on the stage. In fine, the modulation of the voice, and the congruity of gestures, should be such, that the argument may, as it were, be rendered visible to the eyes; and the art of the orator should oblige us with the additional pleasure of a sight and prospect of what nature has only qualified us to hear and understand.

Before we quit this subject, it may not be amiss to say somewhat concerning style, character, or manner of writing or speaking. This is of three kinds. (1.) The magnificent and sublime. (2.) The mean and equable. And (3.) the low and simple style.

The low or humble style is a diction pure, decent, and native, but not rude and uncouth; is close, modest, gently flowing, elegant, and simple; and though it rises not to pomp and ornament, yet it rejects the vulgar ways of expression, and requires a comely dress. Virgil's *Bucolics* may be studied for a specimen of this sort of style or diction.

The mean and equable style rises somewhat higher, and is more frequent in tropes, but yet modest ones; is pretty florid with figures, pleasant in episodes and digressions; flowing with sentences, yet gently, like a river whose waters glide murmuring over the stones between its banks, painted on either side with flowers, and variously shaded with woods. For this read Virgil's *Georgics*.

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The

Of the sublime
style.

The sublime and magnificent style admits of nothing mean or low throughout the whole, no not so much as a single sentence; if any such thing be observed, though all besides be said ever so well, it will lose the character of the sublime. It consists in a most exquisite choice of words, polite and elegant, bold and ponderous; great dignity of tropes and figures, which it useth with the utmost freedom, splendid and noble, but not dazzling; solemn majesty of sentences, abounding with grand and awful ideas; and all other magnificent furniture of periods, numbers, &c. This not only terrifies with thunder, and flashes with lightning, but strikes with thunderbolts: or like a mighty rapid torrent, enlarged with winter snows, or mountain streams, which furiously bears down bridges, banks and flood-gates, lays waste the fields, overturns the rocks; and where it finds no way, will force one; so it bears away with itself the hearer and adversary, and forces them to go wherever it pleases to ravish them. This glorious strain of rhetoric runs through the *Æneid*, which is perhaps the noblest instance of the sublime that we can read. If any thing common there occurs, it receives a peculiar turn, and is exalted by some trope, or beautified with a figure. Thus, instead of wine, fire, bread; Bacchus cheers, Vesta warms, and Ceres satiates hunger.

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OF LOGIC, or the ART of REASONING.

LOGIC is the art of just reasoning; or it is the skill of using rightly the faculties of the mind to the purposes of discovering truth or error. Logic defined.

The faculties or powers of the mind, whose operations are more immediately concerned in logic, are four. (1.) Perception, conception, or apprehension, is that act of the mind which perceives and contemplates the species of external objects offered to the mind by the senses, and whereby we become conscious of them. (2.) Judgment; this is that operation of the mind whereby we compare two or more ideas together, and from viewing them we discover, and accordingly affirm or deny some property of them; as, fire is hot; mere matter cannot think, &c. (3.) Reasoning, argumentation, or ratiocination, is that action of the mind whereby we infer one thing, or one proposition, from two or more propositions premised. Thus when I have judged that man cannot be the cause of himself originally, and yet he is the effect of some cause, I must necessarily infer and conclude, the cause of man's existence is something external and different from himself, which we call God. Of the faculties and operations of the mind concerned therein.
Perception.
Judgment.

(4.) Disposition; this is that faculty of the mind whereby it puts the ideas or conceptions in such an order as is most fitting to give a clear view, and yield the compleatest knowledge of them; and for an instance thereof, you may take this very description of the four operations of the mind, and their effects. The effect of this operation is called method. Reasoning.

Disposition.

The first of these operations or faculties of the mind is conversant about ideas. An idea is the image or representation of objects in the mind: thus the notion or form of a horse, a tree, a man, &c. as it existeth in the mind, is called the idea of a horse, a tree, or a man. Ideas, what.

All ideas acquired by sensation or reflection.

Themes, what.

Of being and not-being.

Substance. Mode.

Of substances, and the various kinds. Simple.

Compound.

Pure.

Mixed.

Animate.

Inanimate.

Vegetable.

Rational.

All ideas become the objects of the mind, or are there presented to the judgment, either (1.) By the perception of the senses, by means of the nerves, which we call sensation: or (2.) By the meditation of the mind, which we call reflection.

The objects of perception, which are the archetypes of our ideas, are called themes, whether they are beings or not-beings, or entities or non-entities; for non-existence may be proposed to our minds, as well as real existence or being.

Being is that which is or doth really and actually exist, and therefore called existence; not-being is that which hath no being or existence in nature, and is called non-existence. Again; every being is considered as subsisting either (1.) in and by itself, and that is called a substance; or, (2.) it subsists in and by another; and then it is called a mode or manner of being. Thus a body, as my pen is a substance, and its figure or shape the mode.

Of substances, some are simple, others compound: simple substances are those which are perfectly homogeneous, or without any mixture or composition of different natures in them: as (1.) Spirits; such we conceive God to be, and the angelic species: or, (2.) The elements of natural bodies, or those first principles, or simple corpuscles of which all material bodies do originally consist. Compound substances are made up of two or more simple ones, and such are all that are perceptible by our senses in the material world.

Again; substances are said to be (1.) Pure, when they consist of only one sort of substance; as a guinea is pure gold, if it has nothing but gold and no alloy of other metal in it. (2.) Mixed; such as consist of two or more heterogeneous substances. (3.) Animate are those which have life and sense, as animals, beasts, fish, men, &c. (4.) Inanimate; those which have no life or sense, as stones, earth, water, &c. (5.) Vegetable; such as are possessed with a power of growth, increase, and production, but without proper life and sense, as plants, herbs, and trees. (6.) Rational; such as are endowed with the faculty of reason and intelligence, as angels and men, and even brutes

brutes too, in some degree: all others are called irrational, or devoid of reason.

Of modes, which are also called the qualities, attributes, and accidents of being or substance, there are reckoned the following kinds. (1.) Essential; that which belongs to the very essence or nature of the substance or subject in which it is; and this is either primary, as roundness in a globe; or secondary, which is consequent upon the other, as volubility or aptness to roll: the first is called the difference, the latter the property of the body or globe. (2.) Accidental; that which is not necessary to the being of the thing, but may be wanting, and yet the nature of the subject remain the same; as smoothness or roughness, largeness or smallness, this or that colour, motion or rest, in a globe or bowl: these modes are properly called accidents of bodies.

Of modes.

Essential; as difference and property.

Accidental: properly call'd accidents.

Absolute.

Relative.

Intrinsic.

Extrinsic.

Action.

Passion.

Natural or

physical.

Supernatural.

Modes of

modes.

Modes are farther divided into (3.) Absolute modes; an absolute mode is that which belongs to its subject without respect to any other being whatsoever, as size, motion, &c. in a globe. (4.) Relative modes are derived from comparison of one being with others; and these are the affections of the absolute modes, as greatness and smallness of size, and swiftness and slowness of motion; which are only so in respect or comparison of the size or motion of other things. (5.) Intrinsic modes are such as are inherent in the subject itself, as roundness, size, motion, rest, &c. in a globe. But (6.) Extrinsic modes are such as derive their being from other beings, without the subject, as vicinity or nearness, or distance, affinity or relation, &c. (7.) Action. Some reckon action, and (8.) Passion, or suffering the action, among the modes of existence, as they doubtless are. (9.) Natural or physical modes are such as are derived from nature, as the shape and senses of animals. But (10.) Supernatural modes are such as result from something above the power of nature, as inspiration, &c. (11.) There are not only modes of substances, but of modes also themselves: for when I say, a man walks gracefully, 'tis plain motion is his mode at that time; but walking is a particular mode or manner of his motion, and gracefully, is still a farther mode of walking.

Of the five
predicables.

Genus.
Species.
Difference.
Property.
Accident.

Of the ten
predicaments.
What they be.

Rejected by
the moderns.

Of non-entity
or not-being.
Is twofold.

Of substances,
as nihility or
vacuum.

Of modes
only.

Privation.

Negation.

Of ideas.

The ancients, and from them the schools of some later ages, have made a great noise about their predicables, and predicaments or categories. By predicables they mean such common words or qualities as might be predicated or asserted of divers things or subjects, as animal may be predicated of man, beast, fowl, &c. Of these predicables they reckoned five kinds, viz. (1.) Genus, or kind. (2.) Species, or particulars of each kind. (3.) Difference, or that quality which makes one thing of a different nature from another. (4.) Property, as before explained. (5.) Accident.

By predicaments they understood an orderly series of words, which expressed simple ideas or things; of these predicaments they numbered ten, viz. substance, quantity, quality, relation, action, passion, where, when, situation and cloathing. But this ten-fold division of things the modern logicians reject, as loose, injudicious, and even ridiculous.

Having thus viewed being or substance both absolutely and variously modified, we shall just reflect on the nature of not-being, or non-entity. This is of a twofold consideration, as it may be in respect both of mode and substance. For (1.) there may be a non-entity of substance, (and consequently of the modes) and this is called pure nihility, or mere nothing; and this in a physical sense is called a vacuum also. (2.)

There may be a non-entity of modes only; and that either of such as naturally belong to the subject; as of the sight, hearing, &c. in a blind and deaf man, and this is called privation: or it is of modes not essential to the subject; as learning, riches, &c. in a mechanic, and this is called negation. Now it is plain a great number of our notions will fall under the class of non-entities, as sin, darkness, &c. and some have cast hither all the relative modes, or relations, and all others which they call mere creatures of the mind. But how justly, let better judges determine.

Being, not-being, and the modes thereof, being considered, we are naturally led to a contemplation of the ideas of those things in our minds. And in doing this, we shall consider their various kinds according to (1.) their original; (2.) their nature; (3.) their objects;

objects; and (4.) their qualities. For this fourfold division will easily comprise them all.

With respect to the original of ideas, they will be

(1.) Sensible or corporeal ideas, as being derived originally from bodies by the senses; such are all the ideas of colours, sounds, tastes, figures, shapes, motions, and all we call sensible qualities. (2.) Mental or intellectual ideas; such as we gain by reflection on the actions of our minds, and observing all that passeth there. Such are the ideas of thought, assent, dissent, judging, reason, knowledge, mind, will, love, fear, hope, &c. (3.) Abstracted ideas; these are acquired by that faculty of the mind, called abstraction. Such are cause, effect, likeness, unlikeness, subject, object, identity, contrariety, and terms of arts and sciences. But these abstracted ideas are too much implied in the other two of sensible and intellectual, to make a distinction of originals.

Ideas divided with respect to their original.
Sensible or corporeal ideas.
Mental or intellectual ideas.
Abstracted ideas.

Ideas, with respect to their natures, are simple and complex, compound and collective ideas. (1.) A simple idea is one uniform and indivisible idea, which the mind cannot distinguish into two or more: as the ideas of sweet, bitter, cold, heat, white, red, hard, soft, thought, will, wish, &c. (2.) A complex idea is made by joining two or more simple ones together; as a square, triangle, tube, pen, a table, reading, body, a man, an angel, a swift horse, &c. and every thing that can be divided by the mind into two or more ideas. (3.) A compound idea is such as contains several distinct and simple ideas of a different kind. Thus man is a compound of body and spirit; mithridate is a medicine compounded of many different ingredients; harmony of different sounds united, &c. Which yet are looked upon often as distinct and single beings. (4.) A collective idea is when a number of ideas of the same kind are united together, and considered in one view; as an army of men; a flock of sheep; a dictionary of words; a nosegay of flowers; a grove of trees, &c.

With respect to their nature.
Simple ideas.

Complex ideas.

Compound ideas.

Collective ideas.

Ideas, according to their objects, may be divided into particular and universal, real, or imaginary. (1.) Particular ideas represent single objects either in a vague and indeterminate manner, as some man,

Ideas divided with respect to their objects.
Particular ideas.

- one time, some one city, any horse, &c. these the schools call the vague individual ideas: or else in a determinate manner; as Cicero the orator, Peter the apostle, this book, that river, the New-Forest, the city of London, &c. (2.) An universal idea is that which represents a common nature, agreeing to several particular things, as a man, a horse, a book. These are also distinguished into general and special; the general ideas are of the genus, or primary common kind, which includes other common natures; as animal is a genus, because inclusive of all the common natures of animals. The special ideas are those of the species, which is a common nature agreeing to several individual beings; thus horse agrees to trot, dobbin, &c. man to Peter, Paul, John, &c. city to London, Paris, &c. Whence 'tis easy to observe the same idea may be sometimes a genus, and at others a species. (3.) Real ideas are of objects which do really exist in nature; but (4.) Imaginary ideas are of those things which do not exist in that particular manner as we conceive them in the idea; as a castle in the air, a Centaur, chimæra, satyr, sea of fire, &c.
- The last division of ideas is that with respect to their qualities; wherein they are said to be clear and distinct; or obscure and confused; vulgar or learned; perfect or imperfect; true or false. (1.) A clear and distinct idea is that which represents the object to the mind in a free and separate view, with full evidence and strength, plainly distinguishing it from every other object. An obscure and confused idea represents the object faintly, imperfectly, and confounded or mingled with others. Thus the sky and the sea exhibit clear and distinct ideas near at hand; but obscure and confused in a hazy day near the horizon. (2.) Vulgar ideas are of the most common and sensible appearances contained in the objects; as of the splendid colours and form of the rainbow: but learned ideas represent the more intimate nature, properties, causes, and effects of things; as a philosopher's idea of the various reflections and refractions of sun-beams in drops of falling rain, and the genesis of the rainbow from thence. (3.) Perfect or adequate ideas represent their archetypical objects, compleatly and perfectly, or fully and entire; as those of a square or triangle; all the parts whereof
- Universal ideas, are general or special.
- Genus, what.
- Species, what.
- Real ideas. Imaginary ideas.
- The division of ideas with respect to their qualities. Ideas clear and distinct, obscure and confused.
- Vulgar and learned ideas.
- Perfect and adequate ideas, and the contrary.

whereof are evident: but imperfect or inadequate ideas represent their objects partially, incompletely, and not entire. As that of a cube, when you see only the square side thereof; or that of a figure of a thousand sides and angles; the powers of the magnet, &c. (4.) True and Ideas are true, when they are conformable to the objects, and represent them just and simply such as they really are; otherwise they are false ideas. As when a man in the jaundice sees all things yellow; or the crooked appearance of a straight stick in the water; or the sun or moon rising bigger than in the meridian.

Thus we have taken a succinct view of substances and modes, as they exist without us, and form the various material and modified world; and also of the ideas which they excite within us, and which constitute that noble variety and treasure of knowledge and science in the mind: 'tis now in order requisite that we take notice of the ways and means whereby we are able to express these ideas and sentiments of the mind, and to communicate them to others: and this is by the use of speech and language.

Language has been already treated of so far as it has a grammatical and rhetorical regard. It remains now to be considered with respect to its use in logic, or the art of reasoning. And thus we must consider words and terms, as marks, characters, or symbols of ideas, either vocal or written, and which are aptly expressive of their different natures and properties, and render them intelligible to others.

And as words are the medium of knowledge and truth, so it often happens they are sources of mistake and error: and that (1.) because there is no necessary connexion or relation between our ideas and words, but words are arbitrarily imposed by different people; and who therefore in different sounds express the same thing; as *albus* in Latin, *blanc* in French, *leucos* in Greek, and *white* in English. (2.) Because different simple ideas are not always expressed by appropriate single words, but oftentimes many by the same word. As the words *sweet* and *sharp* are both applied to the objects of different senses, viz. of hearing and tasting. (3.) Because we cannot always express the simple ideas in complex ones, by peculiar and appropriated words;

A transition
to language,
or words and
terms.

Of language
considered
with regard
to its use in
logic.

Words the
means not
only of know-
ledge, but of
error some-
times. The
principal
sources there-
of.

words; as we do in the apple bitter-sweet. (4.) Because many words are used in their original sense, and yet their etymology is different, obscure or uncertain. (5.) Because many words are used in a sense entirely different from that in the original language. Thus the word spirit with us is from spiritus, breath, or air, from spiro, to breathe, in Latin; the same also is in the Greek and Hebrew for the same word. (6.) The last great cause of error I shall mention, is the signifying many ideas, of different natures, by one and the same word: as the word gate signifies a great door, the mien in walking, &c.

Of the various kinds of words and terms.

From whence it is evident, if we would avoid mistake and error in our pursuit after truth, we must take good heed to the use and meaning of words and terms, and be acquainted with their various kinds. The kinds of words are those which follow: (1.) Positive and negative. (2.) Simple and complex. (3.) Common and proper. (4.) Univocal and equivocal. (5.) Concrete and abstract terms. Of all which in their order.

Of positive and negative terms.

Terms are either positive or negative. Positive words have an affirmative sense, and signify some positive idea; as art, life, sense, motion, &c. But negative terms exhibit negative ideas, or have a negatory sense expressed by some particle or preposition of denying joined to them; as artless, lifeless, senseless, nonsense, &c. Thus the positive terms finite, immoveable, irregular, &c. are rendered negative by the particles in, im, ir; as infinite, immoveable, irregular, &c. But in many cases positive words have negative significations, and the contrary, which is a great imperfection and unhappiness in language.

Of simple and complex terms.

The second division of terms is into simple and complex. A simple term is one word; a complex term is when more words are used to signify one thing. Thus, the second emperor of Rome excites the idea but of one man, viz. Augustus. Of this sort are most circumlocutions. Also many simple words are complex in sense; as those which contain complex, compound, and collective ideas; as man, mithridate, army, &c. which all contain a variety of ideas; as are most of our moral words and natural ideas, religion,

ligion, piety, loyalty, knavery, theft, &c. Some terms are complex both in words and sense; as, a fierce dog, a pious man; which expressions excite an idea not only of the creatures, but their peculiar qualities also.

Again, words and names are either proper or common, which are also called appellatives; for both which see the chapter of grammar. Only here observe, (1.)

That proper names in some sense may become common: as, Cæsar was the proper name of Julius the first Roman emperor, but became afterwards the common name of all the following emperors. (2.) A common name is sometimes used as a proper one; thus when we in Great-Britain say, the king, the prince, we intend properly king George, and George prince of Wales. (3.) That any common name is made proper, by the addition of some term of a particular and determinate meaning; as, the present pope, the king of Great-Britain, the Roman orator, this book, that knife, &c.

The fourth division of words and terms is into univocal and equivocal. Univocal words are such as signify but one idea, or at least but one sort of thing; as book, bible, fish, house, elephant. But equivocal words are such as signify two or more different ideas, or different sorts of objects: thus the word head signifies the head of a nail or pin, as well as of an animal. So the words nail, post, church, grave, high, sweet, sharp, &c. are equivocal, as signifying several different things. And when persons in dispute use equivocal words with a design to puzzle or deceive, it is called equivocation. Note, that as these equivocal terms are called homonymous or ambiguous; so words which signify the same thing are called synonymous, as faith, belief, credit, assent, which all import the same idea, or action of the mind.

Since equivocal words are of the greatest importance to be well understood, and their various senses distinctly known in all polemical affairs, or matters of disputation; I shall briefly here enumerate the several kinds thereof. And (1.) Some are equivocal in sound only; as rein, of a bridle; reign, of a king; rain, a shower: might, strength; mite, a little animal:

Of proper and common words.

Of univocal and equivocal words.

Equivocation, what. Homonymous and synonymous terms.

Of the several kinds of equivocal words and terms.

Some in sound;

so

Others in writing.

Some in extent of meaning.

Some by original and customary use.

Some by a figurative and literal sense.

Some by a common and scientific meaning.

Some by an absolute and comparative one.

Their sources.

Transition to definition.

Definition wherefore necessary, both of words and things.

so write, wright, right, &c. (2.) Some in writing only; as to tear in pieces, is spelled and wrote the same as a tear; and to lead, the same as lead, a metal. Bowl a ball, and bowl a vessel, are wrote the same.

(3.) Some are equivocal in respect of their extent of meaning, being sometimes taken in a larger and more general, and sometimes in a more particular and restrained sense. Thus sin and virtue are sometimes used to signify particular actions and faculties; and sometimes the general nature of all good and evil. (4.) Some are so in regard of their original and modern or customary use. Thus spirit originally signified the breath, air, or wind; but it is likewise used to signify invisible beings. Geography originally signifies a description of the earth only, but by custom it generally includes that of both earth and sea. The same may be observed of theology, astronomy, geometry, &c.

(5.) Some by reason of a literal and figurative sense. Thus, by a metaphor, God is said to repent, grieve, &c. By the figure Epitrope, Solomon says, Rejoice, O young man, and let thine heart cheer thee, &c.

(6.) Some on account of a common and scientific meaning. Thus passion vulgarly signifies anger or wrath; in morality the affections of the mind, as love, joy, fear, sorrow, &c. and philosophically it signifies the receiving any action impressed: so the word simple in the common sense is foolish; but in science, it is single. (7.) Some on account of an absolute and comparative sense: as when our Saviour says, Be ye perfect, as your heavenly Father is perfect. These are the principal kinds of equivocal or ambiguous words, which have their sources from chance, error, time, custom, figure, occasion, interest, &c.

The nature of substances, modes or qualities, together with their ideas and the words which express them, being all considered, and discoursed of; it remains that we now approach to the use that is to be made thereof in the art of disputation. In order thereto, the first thing necessary is definition; since before we pretend to hold an argument or discourse, with a view of gaining or forcing belief, it is absolutely necessary that those words and things, on which the force of the argument depends, be first well defined and

and explained, before they can be understood. For since belief is only the assent of the mind to the truth or falsity of a proposition advanced by another in a way of reasoning, according as it appears evident and intelligible, it is easy to observe, (1.) That faith is not a matter of choice, or dependent on our will, but follows necessarily the evidence and probability of reasoning. Therefore, (2.) when we do not understand the terms and subject of argumentation, we can in no wise be said to believe the inferences or conclusions formed from thence.

Faith or belief, what.

Not voluntary

Definition is twofold; one of the name, the other of the thing. A definition of the name or word, is the explaining and determining precisely what sense, meaning, or signification it is used in; or what idea or object is meant by it; and that by such circumstances or properties thereof, that it may be distinguished sufficiently from all other objects. Thus, to define the word patient, the divine or moralist would say, it is the enduring or suffering injuries and afflictions quietly. The physician defines it, a person diseased, and under his direction for cure. But the philosopher defines it, any body which receiveth action or impulse.

Definition of the name or word.

The directions or rules relating to the definition of names are principally the following: (1.) No words should be chosen but such as have ideas; for though the discourse be sounding and verbose, yet if it wants ideas, or substance, it will be trifling, immaterial, and conclude nothing. Much of this nature may be observed in harangues on the human soul. (2.) We must not suppose the nature of things as different as their names. Thus it would be ridiculous to dispute whether dandelion be an herb or weed, or pot-herb or fallad; since they may all denote the same species of being. (3.) We should not think the nature of two things the same, because they have the same name. Thus speaking of the life of plants, and the life of animals, though the name be the same, the idea must be considered as entirely different in each subject: and heat in the fire, and in our flesh, must have very different definitions. (4.) Learn the true meaning of words and terms from learned men, and learned books, that

The rules for the definition of the name.

that you may not be led into error through vulgarisms and prejudice. (5.) Use plain and intelligible words; and shun those of an obscure ambiguous meaning, that your candour and ingenuity be not suspected. (6.) Let words be defined in their proper and native sense, in which mankind use them, as near as possible; and in all your discourse keep close to the sense defined, and determined.

The definition
of the thing.

The definition of the thing is a description of its general nature and specific properties, whereby the idea of that thing is differenced and distinguished from the idea of any other. Thus, if I would define what wine is, I say, it is the juice expressed from grapes.

The rules re-
lating thereto.

The rules for a good definition of the thing are such as here follow: (1.) It must include the nearest genus, or general nature, of the thing. So above, though wine be a liquid, yet that is a more remote genus than juice; and substance would be still more remote than a liquid; therefore juice, as being the nearest genus, was used in the definition of wine. (2.) That primary attribute or quality of the thing, which determines its specific difference, must be carefully mentioned. Thus to say, wine is the juice of a fruit, is too general a difference; for though it is certain from thence, that it is not the juice of an herb, yet it may be cyder, perry, &c. as being the juices of fruits also: but to say, it is a juice expressed from grapes, distinguishes its special nature, and differences it from all other juices. (3.) It must be universal or adequate, so as to agree to all the particular species or individuals belonging to that idea: so the juice of the grape agrees to all proper wines, whether red, white, Rhenish, Florence, &c. (4.) It must be peculiar to the thing defined, and agree to that alone: so the juice of the grape agrees to no other being but wine. (5.) It ought to be clear and plain, and free from obscure and equivocal words and terms; the design of the definition being to lead us into the knowledge of the thing defined. (6.) It ought to be short, and free from tautology and superfluous words. (7.) The definition ought to be such as will reciprocate with the things defined. Thus wine is the juice of grapes; and we may also say, the juice of grapes is wine. (8.) The

The definition of the thing should be really distinct and different from the definition of the name.

We come now to treat of division and distribution: for being able to define a thing is not sufficient in matters of reasoning; but we must be well instructed in the manner of dividing and distributing whole ideas into their proper parts and species. In order to this, we must consider that there are two kinds of whole

ideas. (1.) An integral whole, when all the parts are distinct from each other, and may subsist apart: as the head, the limbs, and trunk of an animal body. Thus digits are the integral parts of a number; the spring, wheels, balance, axle, pinion, dial-plate and case, are the integral parts of a watch. This sort of parts constitutes the compleatness of any subject: and an enumeration of all those parts is called division. (2.) There is a logical or universal whole; and the parts of it are all the particular ideas to which this universal nature extends: so a species is a whole, as horse; and the individuals, as trot, dobbin, duke, &c. are the parts. Thus if the genus be the whole, the species will be the parts. A proper and distinct enumeration of these parts of a subject, is called distribution.

Of division and distribution.

An integral whole, what.

Compleatness, what.

Division.

Logical whole, what.

Since then division and distribution is an explication of the nature of a thing by a distinct consideration of its integral or logical parts, it will be necessary to lay down the following rules relating thereto. (1.) The parts severally taken must be less than the whole; but taken collectively, (or together) they must be precisely equal thereto. (2.) Begin with, or first consider the larger and more immediate parts; and not divide at once into the more minute and remote parts. (3.) The parts ought to be separate and different, that no one may be contained in another. (4.) Divide every subject with regard to the special design you have in view. (5.) Let not subdivisions (or a secondary division of parts into others still less) be too numerous without necessity; lest it induce confusion, and make you seem affectedly pedantic and impertinent. (6.) Your division of things should be justly according to their natures; avoiding all the jargon of duplicities, triplicities, dichotomies, sevens, &c. which nature never affects. These rules equally serve for distribution, if instead of parts you read species or individuals.

Distribution.

The rules for good division and distribution.

Before

Special rules
to direct and
assist our con-
ception of
things.

Before we leave this first general head, or part of logic, viz. conception, it will be very proper to lay down some rules, directing and assisting us in that act of the mind, whereby we perceive and obtain our ideas.

(1.) Endeavour to get a clear and distinct conception of things, just such as they are in their own natures. Thus optic glasses take off the dazzling fallacious lustre of objects, bring distant ones to a near and distinct view, and shew the unseen native beauties and parts of the most minute animals. (2.) Conceive of things compleatly, in all their parts; thus the anatomical knife dissects an animal body, and separates the membranes, muscles, organs, arteries, veins, nerves, &c. and shews the several parts which compleat the whole. (3.) Conceive of things comprehensively, in all their properties and relations; like as a terrestrial globe, turning on its axis, shews all the variety of lands and seas, kingdoms and nations, and their various situations and relations to each other. (4.) Conceive of things extensively, in all their kinds, species, and individuals: as a prism of glass, refracting the sun-beams, separates the different kinds of colours, red, orange, yellow, green, blue, indigo, violet, and distributes them in order on the painted spectrum. (5.) Conceive of things orderly, and in a proper method; that your ideas be disposed like books in a well-contrived library, according to their sizes and subjects. Proceed we now to the second great part of logic, viz.

Of the second
great part of
logic, judg-
ment.

Judgment; this has been already defined as an act of the mind; but as a great part of logic, it must be defined, the doctrine of propositions in general, with regard to their nature and kinds. For as ideas are the result of conception or apprehension, so propositions are the effects of judgment.

A proposition
defined.

A proposition is a sentence wherein two or more ideas or terms are joined by one affirmation or negation. As, Plato was a philosopher. Descartes was not so good a philosopher as Sir Isaac Newton.

The parts
thereof
The subject.

There are three things necessary to the nature and constitution of a proposition, viz. (1.) The subject; or that of which any thing is affirmed or denied. As Plato and Descartes in the foregoing examples.

The predicate.

(2.) The predicate; or that which is affirmed or denied

denied of the subject. Thus philosopher is the predicate of the first proposition; and, so good a philosopher as Sir Isaac Newton, in the latter one. The subject and predicate, taken together, are called the matter of the proposition. (3.) The copula; this is called the form and mode of a proposition, as it represents the manner of it in affirming or denying; and is expressed by the words or particles *am, art, is, are, &c.* or, *am not, art not, is not, are not, &c.* or, *may, can, ought, should, must be, &c.* and the same joined with *not*.

Propositions, according to their subject, predicate, and copula, are distributed into various kinds, as they are also with respect to their nature, purport, and evidence. Propositions, how distinguished.

Propositions, in regard of their subject, are of four kinds, viz. (1.) Universal; when the subject is taken in its whole extension, and hath universality signified by proper words, as, *all, every, no, none, &c.* as, *all men must die; no man knows all things.* (2.) Particular; when a subject is not taken in its whole extension; and is denoted by words of particularity, as *some, many, a few, &c.* as, *some men are born blind: many notions of God are erroneous: few men are truly wise.* (3.) A single proposition; when the subject is a singular and individual term or idea. As, *Descartes was an ingenious mathematician: Sir Isaac Newton excelled all: this day is very fine.* (4.) Indefinite; when the subject has no note of universality or particularity affixed to it, and yet is general in its nature; as, *men are rational creatures; stones have no sensation.* Propositions in regard of the subject are universal. Particular. Single. Indefinite.

Propositions, with respect to their copula, are either (1.) Affirmative; when the copula is one of those sorts of words, which affirm or assert something positively of the subject, as, *all men are sinners: there will be a resurrection of men's bodies.* Or, (2.) Negative; when the predicate is denied of the subject, by some particle of negation; as, *man is not innocent: no man is immortal.* Of affirmative and negative propositions.

Propositions, in regard of the predicate, are distributed into pure and modal. (1.) A pure proposition is that which merely and simply expresses the predicate connected with the subject; as, *man is an animal.* Of pure and modal propositions.

M

(2.) Modal

Modes of connecting the subject and predicate.

(2.) Modal propositions are such as include also the manner and way wherein the predicate is connected with the subject. The modes of such connection are reckoned four. (1.) Necessity; as, 'tis necessary a globe should be round. (2.) Contingency; as, a globe may be made of wood or glass, 'tis indifferent which. (3.) Possibility; as, 'tis possible a globe may be made of water. (4.) Impossibility; as, 'tis impossible a globe should be square. But these modes, being only natural, are very deficient in number; since to them may be added metaphysical, moral, civil, and other modes of connecting the predicate with the subject.

Single and compound propositions defined.

Propositions are distributed into single and compound, in consideration of their nature. (1.) A single proposition is that which hath only one subject, and one predicate. If these contain simple ideas, or simple terms, the proposition will be purely simple; as, man is risible: virtue is desirable. But if the subject or predicate are made up of complex terms, the proposition will be complex; as, every sincere penitent is pardon'd: no man is perfectly innocent. (2.) A compound proposition hath two or more subjects, or predicates, or both expressed or understood; as, riches and honours are snares: men are rational and mortal: light and heat enliven and delight both men, and beasts, and creeping things. And according as the particles and, either, or, if, that, because, as, so, but, tho', yet, only, alone, than, are used to connect the complex terms, so the propositions are denominated copulative, disjunctive, conditional, causal, relative, discretive, exclusive, exceptive, comparative, &c.

Several sorts of the compound ones.

True or false propositions defined.

Propositions, according to their sense or signification, are distinguished into true and false. (1.) A true proposition represents things as they really are; as, every bird has wings: brutes are not insensible machines. (2.) A false proposition is that which expresses things otherwise than they truly be; as, birds have no wings: brutes are mere machines without sense. The first of these propositions we commonly call a truth, the latter a lie or falsehood.

Truth and a lie, what.

Certain and doubtful propositions defined.

Propositions (in the last place) are divided, with respect to their evidence, into certain and doubtful. (1.) A certain proposition is that whose evidence of the

the agreement and disagreement of the ideas with their objects, or of the predicate with the subject, is so strong and plain that we cannot forbear or delay our assent thereto; as, every circle hath a centre: brutes can see, hear, taste, smell, and feel pleasure and pain. Propositions of this kind make what we call knowledge. (2.) Doubtful propositions are such as have not their evidence so clear and strong as to force assent, and by admitting obscurity therein, permit us to suspend our belief at pleasure, and absolutely prevent knowledge. As, the planets are inhabited: the soul of man is a spiritual being, and survives the body. This sort of propositions are what we call opinions.

Propositions, according to their quantity, are universal or particular; and they are affirmative or negative according to their quality. The four propositions hence arising, the schools denote by the capitals A, E, I, O, thus:

A	denotes a	Universal	Affirmative,	All men are mortal.
E			Negative,	No men are mortal.
I		Particular	Affirmative,	Some men are mortal.
O			Negative,	Some men are not mortal.

Knowledge,
what.

Opinion,
what.
Of universal
and particu-
lar, affirma-
tive and nega-
tive propo-
sitions.

According to these verses,

A affirms, and E denies, both universally.

I affirms particularly, and O does so deny.

Of these propositions, taken two together, A O or E I make a contradiction, or are contradictory; for they can never be both true and both false at the same time.

Propositions.
Contradictory

A E are contraries, for they cannot be both true, but may be both false together.

Contraries.

I O are subcontraries; these may be both true together, but cannot be both false.

Subcontraries.

A I or E O are called subalterns: wherein (1.) if A or E be true, I or O will be true also, but not the contrary. (2.) If I or O be false, then will A or E be so of course, but not the contrary. (3.) They may be sometimes both true, and sometimes both false.

Subalterns.

Conversion of propositions, what.

The conversion of propositions is when the subject and predicate change their places with preservation of truth. This may be always done in E and I.

As { E No spirit is an animal. } converted. { No animal is a spirit.
I Some passions are evil. } Some evils are passions.

Of the third great part of logic, argumentation, or reasoning.

A syllogism defined.

The matter thereof twofold.

But in A and O this conversion or reciprocation of subject and predicate will not hold; unless in A you convert with I, thus, ^aevery weed is a plant, therefore ⁱsome plant is a weed. But in O, though you may say, ^osome vegetable is not a weed, you cannot say reciprocally, some weed is not a vegetable. So much for propositions in themselves considered.

The doctrine of ideas and propositions being dispatched, the next great part of logic is, in order, argumentation or reasoning; for as we join ideas to frame propositions, so propositions are joined to form an argument or syllogism.

A syllogism then is an argument whereby we infer something that is less known, from truths which are more evident. The matter of a syllogism is twofold, viz. (1.) The remote matter called the terms; and (2.) The immediate matter, which are the propositions.

The terms of a syllogism, what.

The terms of a syllogism are the parts of which the propositions do consist, and into which the syllogism is ultimately resolved. To illustrate this, suppose the question were put, Whether God must be worshipped? An argument or syllogism formed in order to prove this in the affirmative, hath always three terms. (1.) The greater term; which is the predicate of the question, which here is the worship queried. (2.) The lesser term, which is the subject of the question, as here God. These two are called the extreme terms. (3.) The middle term, which is one arbitrarily chosen, and disposed in two propositions, whereby to connect and shew the agreement or disagreement of the major and minor terms in the other proposition or conclusion; and therefore this middle term is sometimes called the argument. In this question, I take for the middle term, the idea or notion of a Creator; then the three propositions of the syllogism will stand thus.

Our

Our ² Creator must be ¹ worshipped ;
 But ³ God is our ² Creator :
 Therefore, ³ God must be ¹ worshipped.

In this syllogism the figures 1, 2, 3, shew the places of the major, middle, and minor terms in the propositions ; and from such a disposition of them, it is evident how natural and just the conclusion of inference is, to satisfy the question.

The immediate matter of a syllogism are three propositions. (1.) The major or greater, which contains the middle term connected with the predicate of the question, or major term. (2.) The minor or lesser, which connects the subject of the question with the middle term ; and is sometimes called the assumption. (3.) The conclusion, which infers or asserts the point in debate.

The propositions of a syllogism.
 Major.
 Minor.
 Conclusion.

In a syllogism we are farther to consider the figure and mood. (1.) The figure of a syllogism is the proper disposition of the middle term with the parts of the question. (2.) A mood is the regular determination of propositions according to quantity and quality, i. e. their universal or particular affirmation or negation. These moods are represented by technical words, containing the vowels A, E, I, O, which alone are regarded, and the consonants all neglected.

Of the figures and moods of syllogisms ; what they are, and how many.

There are three figures.

In the first the middle term is the subject of the major proposition, and the predicate of the minor. This contains four moods, viz.	Barbara. Cesarent. Darii. Ferio.
In the second the middle term is the predicate of both the premises. This contains four moods alio.	Cesare. Camestres. Fesivo. Baroco.
The third figure requires that the middle term be the subject of both the premises. It has six moods.	Darapti. Felapton. Disamis. Darii. Bocardo. Ferison.

First
figure.

Examples of the MOODS in the First Figure.

Bar-
ba-
ra.

- I. Every ² wicked man is ² miserable ;
All ³ tyrants are ² wicked men.
Therefore all ³ tyrants are ² miserable.

Ce-
la-
rent.

- II. ² They who are always in fear ¹ are not happy ;
³ Covetous men are ² always in fear ;
Therefore ³ covetous men are ¹ not happy.

Da-
ri-
i.

- III. ² Whatever exerts rational actions has ¹ some reason ;
Some ³ brutes exert ² rational acts ;
Therefore some ³ brutes have ¹ some reason.

Fe-
ri-
o.

- IV. ² Nothing mysterious can be a ¹ part of true religion.
³ Some call'd religious opinions are ² mysterious ;
Therefore ³ some call'd religious opinions are ¹ no part of true religion.

Second
figure.

Examples of the MOODS in the Second Figure.

Ce-
fa-
re.

- I. ¹ Nothing should be despised that is ² God's creature ;
³ All insects and reptiles are ² God's creatures ;
Therefore no ³ insect or reptile should ¹ be despised.

Ca-
me-
stres.

- II. ¹ Every part of religion is ² clear and plain ;
No ³ mysterious doctrine is ² clear and plain ;
Ergo, No ³ mysterious doctrine is ¹ any part of religion.

Fe-
fi-
no.

- III. ¹ No sin is ² excuseable ;
Some faults are ² excuseable ;
Ergo, ³ Some faults are ¹ not sins.

IV. ¹ Every

Ba-
ra-
co.

- IV. ¹ Every part of religion is ² rational ;
³ Some parts of popery are not ² rational ;
 Ergo, ³ Some parts of popery are not ¹ religion.

Third
Figure.

Examples of the MOODS in the Third Figure.

Da-
rap-
ti.

- I. ² All liars are ¹ hated of God :
² All liars are ³ men :
 Ergo, ³ Some men are ¹ hated of God.

Fe-
lap-
ion.

- II. ² None who believe in Christ ¹ shall be damned ;
² All who believe in Christ ³ have sinned :
 Ergo, Some who ³ have sinned shall not ¹ be damned.

Di-
fa-
mis.

- III. ² Some opinions are ¹ said to be damnable.
² All opinions are ³ necessary acts of the mind.
 Ergo, Some ³ necessary acts are ¹ said to be dam-
 nable.

Da-
ti-
si.

- IV. ² All wise men are ¹ happy ;
² Some wise men are ³ very poor :
 Ergo, ³ Some very poor men are ¹ happy.

Bo-
car-
do.

- V. ² Some sort of war is ¹ not to be avoided.
² All war is ³ bloody and hostile.
 Ergo, Some ³ bloody hostilities are ¹ not to be
 avoided.

Fe-
ri-
son.

- VI. ² No afflictions are ¹ pleasant.
² Sometimes afflictions are ³ good and necessary.
 Ergo, Some ³ good and necessary things are ¹ not
 pleasant.

Three special
rules con-
cerning the
figures.

There is a fourth figure of five moods added by some, but not worth mention in this epitome. The special rules of the three figures are these. (1.) In the first, the major proposition must always be universal, and the minor affirmative. (2.) In the second also the major must be universal, and one of the premises, with the conclusion, always negative. (3.) In the third, the minor must be affirmative, and

the conclusion always particular. The syllogisms hitherto treated of are simple; I shall next take notice of

Of complex
syllogisms.

Complex syllogisms, which are so called because the middle term is not connected with the whole subject, or the whole predicate in two distinct propositions, but is intermixed in a confused manner, and compared with them by parts. As,

The devil is a wicked spirit.

Some Indians worship the devil.

Therefore some Indians worship a wicked spirit.

Here the predicate of the conclusion is — worship a wicked spirit; part of which is joined with the middle term devil in the major, and the other part in the minor. This may be reduced to a simple syllogism of the first figure, in the mood Darii, thus;

Da-
ri-
i.

The devil is a wicked spirit.

What some Indians worship is the devil.

Ergo, What some Indians worship is a wicked spirit.

Though the conclusiveness of the argument in its complex state was obvious enough without this reduction.

Four sorts of
conjunctive
syllogisms.
Hypothetical.

Conjunctive syllogisms are those wherein the major proposition has distinct parts connected together by some conjunction or particles of speech; the principal of which are four, viz. (1.) A hypothetical syllogism, when the major or minor, or both, are conditional propositions; as,

If there be a God, the world is governed by providence;

But there is a God; ergo,

The world is governed by providence.

Disjunctives.

(2.) A disjunctive syllogism is when the major proposition is disjunctive; as,

The planets are either inhabited or useless.

But they (as the noble works of God) are not useless.

Ergo, The planets are inhabited.

(3.) A

(3.) A relative syllogism requires the major proposition to be relative; as,

Where the treasure is, there will the heart be;

But a miser's treasure is in his bags:

Ergo, His heart is there too.

Or, A saint's treasure is in heaven;

Ergo, His heart is in heaven also.

(4.) A connective or copulative syllogism is that which hath the parts of the major conjoined with copulatives; as,

No man can serve God and mammon;

The covetous man serves mammon;

Ergo, He cannot serve God.

Or, The true Christian serves God;

Ergo, He cannot serve mammon.

The force of argument in this kind of syllogisms depends on the truth of the major proposition, which therefore you ought to be well assured of.

Compound syllogisms come next in order to be considered; these are made up of two or more single ones, and may be resolved into them. Of this sort are these four, viz.

(1.) Epichirema; which shews the reason or proof of the major or minor, as it proceeds to the conclusion; as,

Sickness may be good for us; for it shews us our frailty, the emptiness of worldly enjoyments, and makes us think of dying, &c.

But we are uneasy under sickness; which we manifest by impatience, complaints, groanings, &c.

Ergo, We are sometimes uneasy under that which is good for us.

(2.) Dilemma; this is a sort of argument wherein the whole is divided into all its parts or members, and then infers something concerning each part, which is finally inferred of the whole question. Thus,

In

In heaven we shall either have or not have desires ;
if we have no desires, then we have full satisfaction ; if we have desires, they shall be satisfied as fast as they arise :

Ergo, In heaven we shall be compleatly satisfied or happy.

Prosyllogism, what.

(3.) A **Prosyllogism** ; this is when two or more syllogisms are so connected together, that the conclusion of the former is the major or minor of the following one. As thus,

The acts of the soul in man are thought, will, memory, design, reason, understanding, &c.

But all these actions are discernible in brutes.

Therefore the agent or soul is of the same nature in men and brutes.

But, since the souls of men and brutes are of like nature ; and 'tis granted the souls of brutes die with the body : therefore also does the human soul die with the body.

Sorites, what.

(4.) **Sorites** ; this is when several middle terms are chosen to connect one another successively in several propositions, 'till the last proposition connects its predicate with the first subject. Thus St. Paul saith,

Whom he foreknew those he predestinated ;

Whom he predestinated he also called ;

Whom he called he justified ;

Whom he justified he glorified ;

Ergo, Whom he foreknew he glorified.

Of defective syllogisms.

To these compound syllogisms, which are also redundant ones, may succeed the defective syllogisms, or such wherein the major or minor proposition is wanting or not expressed. Of this kind are the following.

An Enthymem, what.

(1.) An **Enthymem**, which hath one of the premises suppressed or understood. Thus,

Religion is known by good morals.

Ergo, A knave is not a religious man.

Again,

Again, The fixed stars shine with their own native light;

Ergo, The fixed stars are so many suns.

(2.) Induction; this from the species infers the genus, Induction,
or from the parts concludes of the whole. As thus, what.

Socinianism cannot be proved from the Gospels, nor from the Acts of the Apostles, nor from the Epistles, nor the book of Revelation:

Ergo, It cannot be proved out of the New Testament.

(3.) Example; this is so usual a topic as needs no Example,
definition; as, what.

Astronomy hath been studied by kings;

Ergo, None are too great to study astronomy,

Again; Christ himself was baptized:

Ergo, His disciples should not be ashamed of it.

These are the various kinds of arguments made use of in just reasoning; which, if they be formed according to the proper rules of ratiocination, they are said to be true syllogisms; if they disagree therewith, they are called paralogisms, or wrong reasoning. But when a false argument puts on the face and appearance of a true one, then it is properly called a sophism or fallacy; and he who contrives it, a sophist or sophister; and such an art of circumventing and deceiving by false and deceitful arguments is called sophistry. So a sophister can frame an argument to prove that heaven is not worth a penny; thus, Paralogism
and sophism,
what.

Nothing is better than heaven;

But a penny is better than nothing;

Ergo, A penny is better than heaven. Sophist or
sophister, and
sophistry,
what.

This sophism is founded in equivocation; for the word or middle term, Nothing, is used in a positive sense in the major, but in the minor it is used in a quite opposite or negative sense; therefore in all ratiocination the words ought to be explained very clearly, and the premises well proved and established, before the conclusion can be admitted; and the argument be free from A caution
concerning
sophisms.

from the imputation of deficiency or sophistry; and he who uses it, from that of a weak person or a deceiver. Thus much shall here suffice for syllogism and argumentation. We now proceed to the last great part of logic, viz.

Of the fourth and last part of logic call'd disposition, or art of method.

Disposition, or the art of method. Method, in a dialectical or logical sense, is the disposition of a variety of thoughts on any subject, in such an order as is best suited to a clear and just method of reasoning, and is most proper to convince the mind of truth and error, and thereby to gain belief and assent thereto.

It is twofold. Natural and arbitrary.

It is distributed into two general kinds, viz. (1.) Natural, and (2.) Arbitrary. Arbitrary method leaves the order of nature, and accommodates itself to particular views and indifferent purposes; and is mostly used by historians, orators, and poets.

Natural method, what.

Natural method is that which observes the order of nature, and proceeds in such a manner as that the knowledge of the things which follow, depends in a great measure on the things which go before; and this is twofold, viz. synthetic and analytic; and absolutely synthesis and analysis.

Synthetic, or that of composition.

Synthetic method is that of composition; which begins with the parts, and proceeds to the knowledge of the whole; or with the individuals or species, and goes on to the species or genus. It first teaches the nature of the most simple principles, and proceeds on general truths till it arrive by degrees to a notion of that which is drawn from or compounded of them. This method is generally used in teaching the arts and sciences. For instance, geometricians begin with definitions, postulates and axioms; then proceed to the contemplation of points, lines, and angles; from hence to the various properties of superficial figures, as triangles, squares, parallelograms, circles, &c. which are compounded of the former: from hence they ascend to the more complex doctrine of solids, and shew their several natures, affections, relations and properties, arising from their composition of the foregoing superficies. And thus they exhibit a compleat system of that knowledge which is called geometry; but in a method synthetical, and by various gradations.

Exemplified in geometry.

Analytic

Analytic method is that of resolution ; this considers the whole compound at first in a general manner, and then leads us into a more perfect knowledge of it, by resolving it into its first principles or component parts, whether species or individuals, and describes the natures and properties of each of them separately ; and thus you obtain the knowledge of the whole completely. This method has place in teaching the philosophical sciences, as grammar, rhetoric, logic, metaphysics, poetry, philosophy, &c. as also in anatomy, algebra, &c. And indeed in many cases both the synthetic and analytic are conjoined, the better to find out truth, and to communicate it.

Analytic, or that of resolution.

Where used.

The rules of good method.

The rules of good method, whether analytic or synthetic, are comprised under the following heads. (1.) It must be safe, your propositions firm and well grounded in every respect, that so they may be secure from error. (2.) It should be plain and easy, that so it may exhibit a clear and comprehensive view of the whole scheme and design. (3.) It should be distinct, and free from all perplexing mixture of things which ought to be kept separate, that so confusion may be evited. (4.) It should be plenary or full, so that nothing may be wanting that is proper and necessary. (5.) It should be short, or without superfluity, and the whole conducted with a well-concerted brevity. (6.) It should be proper to the subject in hand, to the present design, as well as to the age and place wherein you live. (7.) The parts of the discourse should be well connected, dependent, and cohering by proper and graceful transitions ; by which means the reader is so insensibly entertained, and led on, that he knows not how to leave off till he hath arrived at the end.



OF METAPHYSICS, or ONTOLOGY; or the Science of BEING abstractedly considered.

Ontology defined.

ONTOLOGY is a science which treats of being or entity, and its properties; and that abstractedly in its own simple nature, and not as it relates to bodies and forms, which is the business of physics or natural philosophy; or to quantity, which is of a mathematical consideration; but absolutely as it relates to the existence of all things indifferently. This doctrine was formerly called Metaphysics.

Being, entity, and existence, what.

Being, entity, and existence, are all synonymous words, and only signify the state of that which is, or doth exist, purely as existing; insomuch, that all particular ideas, of body, form, or quality, are excluded, since being is the absolute original state, and primary property necessary to all of them.

The same in a restrained sense.

But the same words, being, entity, existence, when used in a more restrained sense, do also signify things themselves which do exist; but then it is simply and purely with regard to them as such, i. e. as things existing only, without any reference to modes or qualities inherent in them. As when we say, the planets may be inhabited by some sort of beings: the fairies are not real but imaginary beings, &c. Though the word Beings is more commonly used than Entities, and Existence never in the plural, and seldom in the singular to express the thing existing.

The subject of ontology.

In this sense, being or entity is the object of this science, which occasioned it to be called ontology by the Greeks, that word with them importing the doctrines of beings abstractedly considered; and since the notion of being or entity in the abstract is the very soul of this science, it will be necessary to explain, in the next place, what abstraction is, and what is meant by being in the abstract.

Abstraction,

Abstraction, then, is that faculty of the mind, whereby we consider, and contemplate the various relations, properties, and qualities of bodies, alone, or as they are in themselves, and not as they are in the bodies. By this act of the mind, we as it were separate and withdraw it from the body, and all other modes and relations, and view it in itself; and thus (to speak with the schools) we deduce a thing from a singular to an universal state. Abstraction is of two kinds, viz. precise and negative.

Abstraction, what.

Is of two kinds.

Of precise abstraction.

Precise abstraction is when we consider those things apart, which cannot really exist apart; as when we consider a mode or property apart from the subject, or one essential mode without another. Thus I can consider that which we call white in a wall, but in my mind I can abstract this from its singular state, in its subject the wall, and consider it in a more universal state, as a quality which I call whiteness; and find it may be attributed to a great variety of subjects, as milk, snow, chalk, eggs, &c. Thus the round shape of a globe I abstractedly consider as a quality, and find it, as such, in several other subjects, and of different kinds; as the roundness of a circle, the roundness of a cylinder, &c. Also whiteness and roundness may be considered apart, not only from the subjects the wall and the globe, but distinctly from all other modes and relations belonging to them, as height, solidity, weight, &c.

Negative abstraction is when we consider one thing separate from another, which may also exist without it. As when we conceive of a subject without regarding its accidental modes and relations; or when we conceive of one accident without thinking of another. As when I conceive the idea of a needle, without the idea of its sharpness, it is a negative abstraction; and it is the same when I think of a book, without the idea of reading or writing; or when I think of reading without considering the manner, whether vocally or mentally.

Of negative abstraction.

Things thus conceived of, or represented apart from the subject, in the manner as above described, are said to be in the abstract; but when they are particularly considered with or inherent in their subjects, they are then said to be considered in the concrete or subject.

When things are said to be in the abstract or concrete.

Or

Or thus, we say, white, round, tall, witty, weighty, lively, dead, mortal, &c. in the concrete; but, in the abstract, we say, whiteness, roundness, tallness, wittiness, weightiness, liveliness, deadness, mortality, &c.

Having thus distinguished or specified the manner of conception of being or existence in our minds, I shall next enumerate the kinds of being, and then the peculiar properties belonging thereto, and which distinguish them from one another.

Of the kinds of being, substantial and modal.

I think all being in the universe may be distributed into two general kinds, viz. (1.) Material or substantial, that is, the being of substance or matter. (2.) Modal or formal, which respects the being of modes, forms, qualities, and relations, either inherent in, or accidental to substance in general, or its parts in particular. Besides these two sorts of being there are no other, that I know of.

Substantial existence is either spiritual or corporeal.

But then each of these contain their species, or lesser kinds; and these again their numerous subdivisions, and individuals. Thus with regard to substance, material being or existence may be distinguished into (1.) Incorporeal or spiritual, or the being or existence of such things as we do not, or cannot properly call body, but spirit. (2.) Corporeal, or the existence of bodies. I have here designedly avoided the old, though commonly received distinction of real beings into material and immaterial, which I take to be absurd and inartificial; because all real being must be that of realities, and not non-entities; and all realities being positive things, must consist of something, and that something is in itself homogeneous, and universally the same in the essence of all real existences, is the basis of all essences, and the same we call substance or matter; and consequently all positive existence is that of matter, and therefore material wholly, and no part immaterial.

No beings properly immaterial.

In order to have a true notion of spiritual and corporeal existence, we must first have a clear and distinct idea, or true definition, of what spirit and body are, and how they differ.

Spirit defined by Mr. Watts, but not justly.

Spirit, Mr. Watts defines to be power of thinking; but I can by no means think this a just definition: for, if by power, Mr. Watts means only the mere cogitating faculty, as I think it is plain he does, then it is

so far from including any notion or idea of substance, (which yet he affirms spirit to be) that it is only a mere mode or property of some particular substances: for, can any one who believes substance to be matter extended, think that this idea agrees in any wise with the idea of power or faculty of doing any thing in general? If not, it cannot be thought to agree with the idea of any particular sort of power, though the most noble, or that of thinking. The power of thinking is self-evidently nothing but a mode of being, and cannot subsist of itself, abstract from a subject or substance.

I shall therefore define a spirit to be a substance, of a most subtle and (to us) insensible texture and form, possessed of all the faculties and powers of mind and intellect in various degrees of perfection. A true definition of a spirit.

Body I also thus define: It is a gross substance obvious and perceptible by some or all the animal senses, indifferent to the power of thinking, and endowed with great variety of forms and qualities in the several species thereof. Body defined.

The principal differences therefore of spirit and body consist in the following particulars. (1.) The substance of spirits is incomprehensibly fine and subtle, so as to pervade the pores of the most solid mass of matter; but that of bodies is of a gross texture, and renders them obstacles to each other. (2.) The form and substance of spirits are naturally insensible to us; that is, we can neither see, hear, nor feel them; yet are they capable of presenting themselves on some occasions to those senses. But all bodies are sensible by us in part, and most are wholly so. (3.) All spirits are naturally cogitative, or endowed with the power of thinking; whereas this faculty is not essential to bodies; some being possessed therewith, and others not. (4.) Spirits are not the subjects of human knowledge or converse, but bodies naturally are; of these we know many things; of those nothing, unless by revelation, or other supernatural means. The difference between body and spirit.

The principal things relating to these incorporeal essences, or spirits, taught us by revelation, are the following. (1.) That God himself is a spirit, and infinitely the most perfect of all others; whose high dignity, and singular majesty, we call the Godhead, The kinds of spiritual beings. God.

- or Deity. (2.) That next to God, there is another being, originally a pure spiritual essence, which in time assumed thereto a corporeal substance or body, of a most excellent and superlative nature, who therefore is called the Son of God, or next to him in dignity. (3.) We are informed also, that in the third degree of the scale of spiritual essences, is one of a peculiar nature, having a near relation to the other two, and from his office has the name of Holy Ghost, as being the Sanctifier of men. (4.) At an immense remove from these, we find a fourth class of incorporeal substances, called angels by us, but by the heathens dæmons, genii, &c. concerning which we read of various denominations, numbers, and subordinations; which latter is called the hierarchy of angels, and is usually reckoned threefold, viz. The first hierarchy contains the three most honorary orders, called seraphims, cherubims, and thrones. The second hierarchy consists of three intermediate orders, called dominions, virtues, and powers. The third hierarchy contains the three lowest orders, called principalities, arch-angels, and angels.
- Son of God. Concerning angels we have also a farther account; that they were originally all pure, perfect, holy, and divine spirits, and ministered the sovereign power and high commands of the Deity to inferior created worlds; but that in time some proved treasonable and disobedient to the Majesty of Heaven, who therefore expelled, rejected, and cast them down from the celestial abodes, and blissful state they before enjoyed; whereupon they became enraged against God, and are said ever since to go up and down spreading evils over the moral world, and seeking the destruction of mankind from a principle of revenge and hatred to God. These are therefore by us called evil spirits, wicked angels, and, in common, devils. The good angels, who continued in their state of native rectitude and loyal obedience, are called good angels, and sons of God; whose business and office it is, to minister for those who are heirs of salvation.
- Holy Ghost. One thing more revelation teaches us concerning angels, and that is, that they have a power of assuming any visible form or shape, and becoming the objects of our
- Angels.
- Their three-fold hierarchy.
- Of good and bad angels.
- Apparitions of angels.

our senses: we are informed of several instances of this nature, which is called the apparition of angels. In this case, they have often appeared in human shape, and exerted human actions; as talking, eating, drinking, sleeping, watching, &c. This I take to be confirmed by the apparition of spirits, which many times appear in the persons of deceased men and women, and are therefore said to be their apparition or spirit. For since angels are conversant in all inhabited worlds, and are doubtless well acquainted with the state and exigencies of people, and have the power of assuming a visible or sensible form, why should it not be thought most reasonable for them to be permitted, on some occasions, to personate particular persons after their decease? I see nothing absurd in this supposition, as I can see nothing rational in that which makes these apparitions to be the souls of the departed, whom they represent.

The same as the apparition of spirits.

For, notwithstanding the antiquity and universality of the doctrine of the soul's existence, and the many efforts of the most learned pens to support it, I have never yet been able to see any thing of reason or truth therein sufficient to render it credible, or indeed intelligible. The grand principle on which this opinion is received, is, that mere matter cannot think; 'tis granted it cannot; and it is also as evident, that mere matter cannot move of itself, yet it does not follow that it is incapable of motion, of which we know it is easily susceptible. Why then should it be thought incapable of the power of thinking from the Divine Being? I have not seen it proved a contradiction by its greatest opposers; yea, so far from it, that we have frequent examples of mere matter's being immediately endowed with the power of life and thought by the divine omnipotence; witness Moses's rod. Was it not mere matter one moment, and a cogitative animal the next? Is not dust mere matter? And did not God immediately convert it to animals, by endowing it with life and thought? Again, did not the short-lived serpent immediately return to its pristine ligneous state? Would it not be wretched futility, and a trifling evasion, to say, God instantly inspired the rod and the dust with souls, and then deprived them of them

The doctrine of the soul's existence not rational.

Matter may be endowed with the power of thinking.

Exod. iv. 3.

Exod. viii. 16.

again? It is evident, therefore, that mere matter's being capable (by the almighty power) of the faculty of thinking, is no longer an opinion, but real fact; and consequently the bodies of men and other animals are rendered capable of life and thought, on principles more rational and intelligible, than that of the existence of souls; which is a mere *ens rationis*, or phoenix of ontologists, as I think would be no hard matter to make appear, were this a proper place for such disquisitions.

A distribution
of corporeal
beings.

Animals.
Vegetables.

Inanimate
matter.

The several
modes and
affections of
being enu-
merated.

The several kinds of incorporeal beings or spiritual substances being enumerated, I shall proceed to mention the principal of the other class, viz. of corporeal substances, or bodies. The most proper distribution of these, is into the three following genders. (1.) Animals, which are endued with the properties of life, sense, and thought. (2.) Vegetables, which are such bodies as have a power of growing and increasing by a special organical disposition of parts, in various determinate or generical forms and sizes; as herbs and trees. (3.) Bodies absolutely inanimate, or which have neither an animal nor vegetative life; as earth, water, &c. To each of these kinds belong divers species, and those species have their numerous individuals; which will be the subject of *Physiology* to contemplate, and shall therefore omit them here.

Substantial existences or essences being thus considered, I should next have treated of the modal kinds of being, as properties, forms, qualities, adjuncts, relations, ideas, intellectual notions, &c. but most of these having been already treated of in *Logic*, as being the proper subject of that art, I shall refer the reader thither for an orderly view of them; and here proceed to the speculations of that kind which remain, and are more directly of a metaphysical nature. And they are as follow. (1.) Nature and essence, and nihility. (2.) Matter. (3.) Mind. (4.) Power and action. (5.) Necessity, contingency, and liberty. (6.) Possibility, impossibility. (7.) Identity and diversity. (8.) Corruptibility and incorruptibility. (9.) Dependency and independency. (10.) Simplicity and composition. (11.) Communicability and incommunicability. (12.) Creation, and things created. (13.) Finite

Finite and infinite. (14.) Principles, causes, and effects. (15.) Natural, moral, and artificial. (16.) Permanency and succession. (17.) Absolute and relative. (18.) Subject and adjunct. (19.) Number. (20.) Order. (21.) Time. (22.) Ubiquity or place. (23.) Unity, union, and plurality. (24.) Verity or truth. (25.) Goodness and perfection. (26.) Signs and representations of things. These particulars defined and explained, will nearly exhaust the remaining part of Ontology. To begin with the first.

By nature we are to understand that peculiar modification of matter united with such specific properties and qualities, as make that thing to be what it is, and different from all others. Thus the nature of fire consists in the extreme subtilty, agitation, lucidity, and painful action of its particles, on sensible matter. The essence of a book is many leaves bound together; and the nature of an animal is matter endowed with life and sense.

Of nature and essence.

By the nature of things, is often meant, in a general sense, the eternal, established, and unalterable reason and relation of things; as that of three to five, which must ever make eight, according to the nature of things. Sometimes this phrase also signifies the constant order and course of action in secondary causes; as the succession of day and night, the seasons of the year, the annual production and blooming of vegetables, &c. Any irregularities in this respect are said to be besides nature, as monsters; or above nature, as miracles; or contrary to nature, as sodomy or buggery.

The nature of things, what.

As nature or essence always implies the positive existence of substantial beings, so where there is no real essence, there can be no real existence; and consequently darkness and shadow, which are only the absence of light; and space, which is only the absence of body; are no real essences, but mere nihilities or non-entities; at least, have only a modal existence in the ideas of our minds.

Matter or substance is that mysterious unknown somewhat whereof all bodies consist, and seems to be uniform, homogeneous, or of the same nature in all bodies, diversified with great variety of forms and

Of matter or substance.

qualities,

qualities, hereafter to be described. The matter of a body is either proximate or remote: the proximate matter of which a book is made is paper, ink, covers, &c. But the remote matter is that whereof the paper, ink, and covers, are made.

Of the mind,
and wherein
it consists.

Mind is that primary and noble power or faculty communicated by the Divine Being to some bodies possessed of animal life and sense; whereby they are rendered capable of thinking, understanding, and ratiocination. The breath of life being inspired into a body, it immediately becomes a living soul; that is, a cogitative and sensitive body, an animal. The senses first of all supply the mind with ideas, the proper subject of its actions, which are many; as perception or thought, judgment, reason, imagination, reflection, and volition, or will and choice, comparison, &c. By reason of the mind, animal bodies are affected with various passions, as love, hatred, hope, fear, admiration, disdain, joy, sorrow, and many others. All these mental actions and passions, with their subject matter, do together constitute but one individual being or essence, of several kinds, to be hereafter enumerated in their proper place.

Of power and
action.

Power is that affection of being which consists in a capacity or ability therein to be, to do, or to suffer. Action is the exercise of that power to be, do, or suffer. Hence actual being, doing, or suffering, is often used in contradistinction to potential being, &c. the former denoting that which is real and present; the latter, that which doth not now exist, but hath a mere possibility of doing so. As a child that will or may be born hereafter, hath not now any actual, but only a potential being. There are abundance of distinctions of power, as corporeal, vegetative, animal, natural, acquired, &c. as also of action, as into immanent, transient, natural, supernatural, accidental, free, necessary, moral, &c. which are easily understood by their bare denominations.

Necessity of
two kinds,
existence and
action.

Necessity is of two kinds; (1.) Necessity of existence. (2.) Necessity of action. Necessity of existence is a very obscure idea, and signifies a thing is because it must be, or because its not-being would imply a contradiction to its nature. Thus God is said to exist necessarily,

necessarily, or without any pre-existent cause. Necessity in this case is opposed to contingency, which is only the being or existence of things, which might not have been, and may cease to be. Necessary existence is without a cause, and independent; contingent existence is the effect of a cause, and dependent thereon. Again, necessity of action is that which is founded in the nature of things, and must produce the cause of that action. This is sometimes called fate, or the fatality of actions; and is opposed to liberty or freedom, which is indeed applied to the will, and consists in a spontaneous or voluntary chusing or refusing of what it thinks fit. There are the following distinctions of necessity, viz. (1.) Natural; by this water congeals with cold, and ice melts with heat. (2.) Logical; thus a conclusion necessarily flows from the premises of a syllogism. (3.) Moral; thus it is morally necessary that intelligent beings should worship God; that virtue should be free, to deserve reward, &c.

Necessity of
existence.
Contingency.

Necessity of
action.

Fate.
Liberty.

Natural, logi-
cal, and moral
necessity.

Possibility is that affection of being, which consists in having all the ideas which are supposed to make up its nature, such as may be actually united, and have no inconsistency; as a mountain of gold, or a river of oil. But where ideas are inconsistent and incompatible with each other, and cannot be united, there ensues impossibility: as, cold fire, or silent thunder. Impossibles may be distinguished into four sorts, viz. (1.) Metaphysically or absolutely so, in the abstract reason and nature of things, as a square circle, or circular triangle, a thinking statue, a scarlet sound, a bushel of souls, &c. (2.) Physically or naturally, i. e. according to the present laws of nature; as, three eclipses in a month; a day in our latitude 20 hours long; a perpetual motion, &c. (3.) Morally, i. e. improbable in the highest degree, and which we can have no reason to believe; as, that an atheist can be virtuous or happy; that an Hottentot should compose a system of ontology or mathematics; that a Momus or Zoilus should forbear calumny and vilifying men and works of merit. (4.) Conditionally, or which is rendered impossible by putting in some condition;

Possibility and
impossibility.

Impossibles of
four kinds.
Metaphysical.

Physical.

Moral.

Conditional.

- dition ; as a tree's bearing fruit on supposition it has no bloom, the building a castle in the air, &c.
- Of identity and diversity.** Identity, or the sameness of being, is that affection which consists in one and the same number of particles, of the same peculiar qualities, which constitute the essence or nature of a thing. And if the essences of things be not numerically the same, and have not a perfect agreement of all their properties and qualities, they are said to be diverse, and their habitude to each other is called diversity. Identity is real, or modal, as it particularly respects the essence or modes of beings ; though that which respects the qualities, is properly called likeness or similitude ; or when it relates to the shape or figure, it is called similarity ; if to the quantity, it is called equality. On the contrary, a disagreement in substance or essence is called diversity ; in quality, it is dissimilitude ; in quantity, it is called difference. The pointing out the difference between two things, is called distinction. Disparity is a difference of species under the same genus, as yellow, green, &c. Man, brute, &c. are said to be disparates.
- Is real or modal.** Opposition is a perfect or total disagreement of genus and species both ; as sound and silence, light and darkness, day and night, &c. are called opposites.
- Contrariety.** Contrariety is the relation of the extremes with respect to a mean, toward which they approach in quality as in distance, and wherein they ultimately unite ; as heat and cold, virtue and vice, summer and winter, morning and night, are called contrarieties.
- Contradiction.** Contradiction consists in such a repugnancy of the nature of ideas, as entirely destroys all possibility of union or consistency between them ; as power and impotency, something and nothing, seeing and not seeing, &c. are said to be contradictories, and cannot exist together. As for the common division of identity or sameness into generical, special, numerical or individual, material and formal, the words themselves sufficiently indicate what is meant thereby.
- Of Corruptibility and incorruptibility.** Corruptibility is such an affection of being, as renders it capable of such a dissolution of the parts, by some cause or agency foreign to its nature, which destroys the proper nature, state, and texture thereof, and causes it to cease to be formally the same being as it was

was before. Thus the bodies of men, being dead, suffer corruption by being converted into dust; thus wood by fire is turned into ashes, iron into rust, and copper to verdigrease, by the principle of corruption. This is an attribute of all corporeal substances; but spiritual beings may, for ought we know, admit of no such change or dissolution of parts, but always continue as well formally as materially the same; and may be therefore said to be incorruptible; at least we must allow this attribute of incorruptibility to God, who possesses all perfections.

Dependency of existence is that affection, whereby no being of itself can have a power to be, to endure, or to act, but must receive the same from some other thing, as its cause productive of it. Thus all things depend primarily on God, and secondarily on one another. No animal can produce itself, but depends on its parent, as the pre-existent efficient cause. The doctrine of equivocal generation, or spontaneous production of things, i. e. fortuitously, and without a cause in its own kind, is utterly false, an idle conceit of ignorant philosophers, and the bold assertion of an impious atheist. Consequently, independency, or being without any pre-existent cause, can belong only to a necessary and self-existing being, i. e. to God.

Of dependency and independency.

Equivocal generation exploded.

Simplicity and composition are the next affections of being. Simplicity is defined to be the indivisible unity of being, or where all the ideas of its nature are of one and the same essential nature and kind; as the particles of water, fire, air, &c. purely such; and these constitute a most pure and simple body, which we usually call an element. On the contrary, composition is that affection of being, by which it consists of various ideas of divers natures; and is said to be essential or accidental. Essential composition is that whereby several beings are compounded into one essence: as salt-water, a loaf of bread, &c. Accidental composition is that where some accident is an ingredient in the idea; as the idea of the shining sun, a just man, &c. The question is, whether there be any absolute simplicity in corporeal beings, unless in their primary constituent particles; but of these affections I have already taken notice in Logic.

Of simplicity and composition.

Communicability

Of communicability and incommunicability.

Communicability is that affection, whereby beings are capable of participating of each other's common nature; as heat is communicable to metals, and other bodies; thus one man communicates knowledge to another; and the eyes have a communication of animal spirits from the brain. Plants and animals all communicate of one common nature in each. There are many dry scholastic distinctions and divisions under this head, to be met with in authors, which those who think it worth while may peruse. I shall only just observe here, that incommunicability can be attributed to scarcely any thing but the infinity of God's perfections, and to mere non-entity; for that which a person has not, he cannot communicate to another.

Of creation.

Creation is that affection of being, by which it receives its first mode of existence, or acquires that essence and form which constitute its nature. Thus the world and all things are said to be created by God originally: the earth was created of a chaos, or mass of confused matter: man was created out of the dust of the earth: fish and fowl out of the water. This

Generation.

is a power peculiar to God, since no being can produce itself, but by the ordinary method of generation; which is only a natural means for continuing, propagating, and multiplying beings, already formed and created, and which have a real and formal existence (though invisibly small) in the seed of both plants and animals, as late discoveries have sufficiently made manifest.

Queries.

Quere, (1.) Whether the proper sense of the word creation, is the making something out of mere nothing? (2.) Whether that does not imply a most notorious contradiction? (3.) Whether there is the least shadow of such a notion in the Mosaic account of the creation, Gen. i.? (4.) Whether annihilation, or the reducing of a substance to mere nothing, be not equally absurd, and plainly contrary to mathematical demonstration? (5.) Whether matter, in its own nature, be not necessarily eternal and uncreated?

Of finite and infinite.

Finite and infinite are those ideas which relate to the limits and bounds of existence; and those beings whose nature, parts, quantity, qualities, powers, operations, and durations, are limited or circumscribed within certain bounds and terms, are called finite beings:

beings: but those are infinite which are unlimited, or have no bounds. All substances, and most of their qualities, are finite; some cannot be properly called finite or infinite; as colour, truth, falsehood, &c. Some things are infinite with respect to their duration, and are therefore called eviternal, eternal, or sempiternal, as they are without beginning, without end, or without both; as is the Deity, whose existence is absolutely simultaneous with regard to the parts of time. Some things are infinite in quantity, and then are said to be immense; as the mundane space: yet this may be justly questioned; for as space is mere nihility, and the limit of existence; so existence may be said to be the limit of nihility. Among the abstracted speculations of mathematicians, we find various kinds and degrees of infinity, both with regard to number and magnitude. The arithmetic of infinities is known to every Tyro; the analogy or habitude of infinities, from small to great, is known and determined as intelligibly by them, as the ratio or proportion of any finite quantities is by people in common. There is no medium between finite and infinite; for what we call indefinite, is only that of which we know not the limits containing it.

Eviternity.
Eternity.
Sempiternity.

Immensity.

Mathematical
infinities.

Indefinite.

The principles of things are those primary and original springs and sources from whence they receive their existence; as grapes, apples, and pears, are the principles of wine, cyder, and perry. Thus minerals, metals, and herbs, are the principles of salts, oils, and many other chymical and galenical medicines. Thus also the maxims, axioms, and rules of arts and sciences, are the principles of knowledge and wisdom; and virtue, interest, &c. are said to be the principles of many human actions. I cannot think the parts or ingredients in the composition of bodies, are with any propriety called principles; they are the essentials of existence, and not the sources thereof. A cause is any power or influence productive of existence; and an effect is the product, or existence resulting from the energy of the cause. From hence, it is plain, no being but God can exist without a cause: he is the primary cause of all formal existence at least; and all other causes act in consequence of the divine energy

Of the principles of things.

Of causes and effects.

Primary causes.

operating

- Secondary. operating in the settled laws and course of nature, and
 Universal. are therefore called secondary causes. Again, causes
 Particular. are universal, as the sun, earth, and rain, of plants,
 Univocal. herbs, and flowers; or particular, as the seeds of par-
 ticular plants. Causes are called univocal, when they
 produce effects of their own nature, as when a lion
 Equivocal. produces a young lion; or equivocal, when the effect
 is of a different nature, as when a man writes a book.
 Solitary. Again, causes are solitary, as when a pestilence de-
 Social. stroyes a city; or social, as when an army of officers
 Emanative. and soldiers conquer it. An emanative cause is when
 the effect flows without any action to produce it, as
 Efficient. heat or light from fire. An efficient cause is that from
 whose proper action the effect directly results; as when
 Instrumental. a man bends a bow, or the bow gives flight to the
 arrow, or the arrow strikes the mark. An instrumental
 cause respects the means, as the knife in making a pen.
 Necessary. Necessary causes are such as ever act from a necessity
 of the nature of things; thus intercepted light must
 produce shadow or darkness; fire must necessarily
 Contingent. burn, &c. A contingent cause is that which casually
 acts, as a tile falling on a man's head. A cause is
 Accidental. accidental when undesigned, as the breaking a window
 Material. by throwing a stone at a bird. A material cause is the
 Formal. substance, as a gold or brass ring. A formal cause is
 the form, as the roundness and circular space of a ring.
 Besides these there are a great number of other kinds
 and divisions of causes, of too little moment to be here
 insisted on.
 Of natural. That is said to be natural which is made or done
 according to, or results immediately from the settled
 laws, and established order and course of nature, which
 God first founded in the general disposition of the uni-
 verse, and the constitution of things. Thus the gra-
 vitation of bodies, the vegetation of plants, the pulsa-
 tion of arteries, the generation of animals, &c. are said
 to be natural things. That is said to be moral, which
 Moral. proceeds from or pertains to manners, conduct, and
 government of reasonable and intelligent beings, en-
 dowed with freedom of will, and under obligations to
 particular actions of duty. Thus law, virtue, vice,
 sin, pardons, rewards, penalties, &c. are of a moral
 nature.

nature. That is artificial which results from the art, Artificial.
skill, or contrivance of men; as arms, statues, pic-
tures, houses, books, &c.

Permanency is that state of being, wherein the exist- Of perma-
ence is constant, uninterrupted, and without change; nency.
as the position of the sun and stars in the firmament,
the colour of the sky, the body of the atmosphere,
the rocks and mountains of the earth, &c. which are
said to be permanent things; though, strictly speaking,
there can be no absolute, but only comparative per-
manency, in any corruptible beings.

Succession is that state of being, which respects the Of succession.
parts of time, in which things of a cognate nature,
or of the same kind, order, or line, have their exist-
ence, with regard to each other, so as they may be
said to be before or after one another. This is either
immediate, or without intervention of any other; as
king George III. is the immediate successor of king Immediate or
George II. Or it is remote, as the present king is a remote.
remote successor to William the Conqueror. Again,
with respect to the manner of succession, it is either
direct, as of persons in a stock or family; or alternate, Direct, alter-
as of day and night; or interchangeable, as of the nate, or inter-
strokes in the changes on bells. Also it is said to be changeable.
constant, where there is no vacancy of subjects in any Constant and
part of the line; and when there is, the succession is ininterrupted.
said to be broken or interrupted.

Absolute and relative affections of being are thus Of absolute
distinguished: a thing is said to be absolute when it is and relative.
considered as subsisting by itself, exclusive of all other
ideas of existence whatsoever, or so as if no other be-
ing was any more concerned in the speculation thereof,
than if it did not really exist. But relative affection,
or relation of being, is the respect or habitude which Relation.
two or more things have to one another, in regard of
some common property or affinity of their natures.
Thus paternity and sonship, greatness and smallness,
are relative ideas; so father and son, a part and a whole,
the beginning, middle, and end, are relative terms.
In relations, the subject thereof, or thing spoken of,
is called the relate; and the other term, to which the Relate and
subject relates, is called the correlate. Thus, if we correlate.
speak of a father, he is the subject or relate, and the
son

- son is the correlate; but if we speak of a son, the son is the relate or subject, and the father is the term or correlate. Relations are (1.) Natural; as root and branch, father and children, &c. (2.) Moral; which respects a law, or rule of action, as good and evil, rewards and penalties, &c. (3.) Reciprocal, or synonymous; as cousins, neighbours, partners, balances, &c. (4.) Non-reciprocal; as cause and effect, king and subjects, &c. (5.) Real; in things which do really exist, as master and scholar. (6.) Mental; which are made only by the mind; as genus and species, the abstract ideas, and mental signatures of things, as words, terms of art, &c.
- Subject and adjunct are next to be considered; the subject is the substance of any existence, with all the essentials thereof; the adjuncts are some accidental modes, not necessary to the existence of the subject; but are only certain appendices or circumstances thereof; as time, place, light, cloathing, situation of other things or persons, and the concomitant, antecedent, or consequent events. When we consider things as the subjects of occupation, operations, science, thought, sense, &c. they are then called objects; and are of several sorts, viz. (1.) Immediate; as the words and pages of a book are of a student's occupation. (2.) Mediate; as his library of books. (3.) Remote; as notions, arts and sciences, which are taught by those books. Again, they are (4.) Common; as the size, figure, and motion of bodies, are common to the two different senses of sight and feeling. Or, (5.) Proper; as colours are to the sight only. Lastly, objects are (6.) Material; as the body of a man is of anatomy, physic, and surgery; or, (7.) Formal; as dissecting, curing, or healing of the body, constitute the formal objects of those three arts.
- Number is that affection of being, wherein many single, distinct, and separate substances, are considered as existing together, and making one idea in the mind; as such and such a quotient of men, trees, houses, &c. When several numbers are added, multiplied, or divided, the result is called the sum, product, and quotient, respectively. Number is said to be discrete quantity; as magnitude is called continued quantity.
- Number

Number is finite, indefinite, or infinite, as well as magnitude. See Unity, &c.

Order is that affection of being, wherein one thing is considered as existing before, together with, or after another thing, and therefore may be said to be prior, simultaneous, or posterior to it. Order is sixfold, viz. (1.) Of nature; thus the father is before the son. (2.) Of time; thus spring is before the summer, and autumn after it. (3.) Of place; as the horse is before the cart. (4.) Of dignity; as the king is before the duke. (5.) Of science; thus a line must be known before an angle. (6.) Of number; as the fourth is next in order before the fifth, and after the third.

Order, what.

Of nature.

Time.

Place.

Dignity.

Science.

Number.

Time, as considered by ontologists, is that part of duration, which terminates the interval of the existence of things; or, if considered physically, is what we call successive duration; and is divided into the past, the present, and the future, as is well known. See more of this under Philosophy; and concerning the measures, and civil divisions of it, under the title of Chronology.

Of time.

Ubiety is a term used with respect to spiritual beings, as locality is with regard to corporeal ones, and is the very same thing, viz. that part of space which circumscribes the existence of things at any given moment of time, and is commonly called their place. See Space farther explained under Philosophy. Place is the situation of bodies, and is twofold, viz. (1.) Absolute, which is that part of space any being fills up or possesses, considered simply in itself. (2.) Relative, which is that situation any being has with respect to other quiescent bodies around it.

Of ubiety and locality.

Place, what.

Is twofold.

Absolute and

relative.

Unity is that affection whereby any thing subsists singly and alone in our minds, from all others of a like kind; and it is either simple or compound as to the substance existing; as one flower, or one nosegay. Union is that whereby two or more things become one, or are so considered; as metals, in fusion, run together, and make one substance; thus states unite under one government. Unity and multiplicity, singularity and plurality, are opposites, and nearly of the same signification in the like terms of each.

Of unity and union.

Verity

- Of verity or truth. Verity or truth is divided by ontologists into, (1.) Metaphysical truth, which consists in a perfect conformity of a being to the divine intellect or idea, which is the grand pattern of all created beings. (2.) Physical or natural truth; which is when a thing has all the essentials requisite to its nature, as pure gold is said to be true gold. (3.) Logical truth; as when words are conformable to their ideas, or propositions to the things intended. (4.) Ethical or moral truth; as when our words or actions agree with our thoughts, and our deeds to our words; the first is called sincerity, the latter veracity.
- Of goodness or bonity. Goodness or bonity is defined to be the convenience or agreement of things with the law and standard of their nature, so that they possess all qualities necessary to answer the design thereof. This is also
- Metaphysical. (1.) Metaphysical; as when things are agreeable to the will of God, and answer his designs. So he surveyed his works, and behold they were very good.
- Natural. (2.) Physical or natural; when they are capable well to answer their natural end; as corn, when fit for seed or food; so air, when fine, pure, and fit for breathing.
- Artificial. (3.) Artificial, as things are made or done near or agreeable to the standard of perfection; as good writing, a good picture, clock, &c.
- Moral. (4.) Moral, which, when it relates to man, is called virtue, or religion when it has a regard to God. When truth and goodness both unite in things, it is called perfection; when either are wanting in any degree, the being is imperfect.
- Perfection, what.
- Of signs, &c. Signs, representations, and denominations of things, are reckoned among the mental relative affections of being; but how justly, I am not here to examine. Signs are the resemblances of some outward real beings, which are thereby represented to our minds. Signs are of various kinds, as (1.) Natural, as a beard is of manhood. (2.) Divine; which is by God's appointment, as the eucharist of the death of Christ. (3.) Human, or appointed by men; as livery to denote great men's servants. (4.) Pigneratitious, or mere tokens or pledges, which do not represent the thing in itself; as the rainbow is a token which

is only to shew and assure us, that the world will not any more be drowned. (5.) Antecedent, as profuse management is of approaching poverty. (6.) Concomitant, as shivering is of an ague present. (7.) Consequent, as a funeral is of death. (8.) Memorial, as a funeral ring is of a person deceased. (9.) Commonstrative, as a tomb of a person buried there. (10.) Necessary and certain, as the morning star is of the rising sun. (11.) Contingent and probable, as prudence and industry are probable signs of a man's thriving in the world. (12.) Prognostic, diagnostic, &c. signs have been already explained in physic. Besides these, there are various symbolical signs and representations of things invented and used by artists; as the characters of algebra, music, and other arts and professions.

Antecedent.
Concomitant.
Consequent.
Memorial.
Commonstrative.
Necessary.
Contingent.
Prognostic,
&c.

This compendium of Ontology, it is hoped, will be sufficient to shew that this is not a dry and unnecessary science, as it is too much reputed: but, on the contrary, that it is an excellent and useful one; as it supplies us with just notions and true distinctions and differences of things, in regard of which it merits the first place in the order of sciences, and ought to be well digested in the minds of all such as would excel in critical and polite literature.

Ontology recommended.

Of the ART of POETRY.

Poetry defin'd.

A poet, who.

POETRY or Poesy is the art, or rather the faculty, of making verses. And a poet is he who hath this art, faculty, or skill, in its genuine perfection. All others who write verses are termed versifiers, poetasters, or poultry rhymers; all which are terms of reproach, and imply, that he who does not write good verses, must necessarily write bad ones; and that is a disgrace. Accordingly Boileau advises,

A poetaster.

Rather be mason, ('tis an useful art)
Than a dull poet: for that trade accurst
Admits no mean betwixt the best and worst.
In other sciences, without disgrace,
A candidate may fill a second place:
But poetry no medium can admit,
No reader suffers an indiff'rent wit.

Verse defined.

Metre, what.

Verse, especially English verse, is composed of metre and rhyme. Metre is when every line is confined to a certain number of syllables, (as ten, eight, or seven, commonly) and the words so placed that the accents may naturally fall on such peculiar syllables as make a sort of harmony to the ear. And rhyme is the similitude or likeness of sound in the last syllables (or those next the last) of every two or every other line. As thus,

Rhyme, what.

The power that ministers to God's decrees,
And executes on earth what he foresees,
Call'd providence, or chance, or fatal sway,
Comes with resistless force, or finds or makes her way.

Doublerhyme

In these lines the two last syllables in order of every two lines sound alike, and therefore are said to rhyme together; but in the following the penultimate syllables, or those next the last, rhyme to each other, and this is called double rhyme. As,

Then

Then all for women, painting, rhyming, drinking,
Besides ten thousand freaks which died in thinking.

Or thus ;

When pulpit, drum ecclesiastick,
Was beat with fist instead of a stick.

There are some verses found to have treble rhyme, Treble rhyme
or wherein the antepenult, or third syllables from the
last in every two lines do rhyme ; but as this is not
worthy practice, so it is not worthy mention.

Some verses rhyme to each other alternately ; as,

Howe'er 'tis well that while mankind
Through fate's fantastick mazes errs,
They can imagin'd pleasures find,
To combat against real cares.
Fancies and notions we pursue
Which ne'er had being but in thought,
And, like the doating artist, woove
The image we ourselves have wrought.

A stanza, or staff of verses, is an entire strain, A stanza of
or compleat period in verse : as, a stanza of three verses, what.
lines.

Nothing, thou elder brother ev'n to shade !
Thou had'st a being ere the world was made,
And (well-fix'd) art alone of ending not afraid. }

A stanza of four verses.

She ne'er saw courts, but courts could have undone
With untaught looks, and an unpractis'd heart ;
Her nets the most-prepar'd could never shun,
For nature spread them in the scorn of art.

The sense should always be finished in the stanza ; In number of
a stanza in English poetry cannot consist of less than verses.
three, and has seldom more than twelve verses, ex-
cept in Pindaric odes, where the stanzas vary very
much.

An ode or song, what.

An ode or song is a certain number of stanzas more or less, and is proper to the Lyric poetry, or that which was made and set to the lyre or harp.

A poem defined.

A poem is a compleat and finished piece of poetry, or any composition in verse.

Blank verse or poetry.

Blank poetry or verse is that which has no rhyme, but only metre, harmony of syllables, and a delightful cadence of the accents. As thus in Milton :

——— I saw the rising birth
Of nature from the unapparent deep.
I saw when at his word this formless mass,
The world's material mould, came to an heap ;
Confusion heard his voice, and wild uproar
Stood rul'd, stoop vast infinity confin'd ;
Till at his second bidding, darkness fled,
Light shone, and order from disorder sprung.

Of poetical numbers, feet and place.

Poetical numbers, and feet and place, may be understood as follows : in poetry (especially in the Latin, Greek, &c.) syllables are distinguished, according to quantity, into long and short : the long syllable hath this mark -, the short one this o ; and a certain number of these long and short syllables make a foot, or the poetical feet of a verse. This place or region of a foot in a verse is its situation in regard of the beginning ; as the second, fourth, sixth, are called even places ; the first, third, fifth, are called odd or unequal places.

Poetic feet, and their kinds.

Of feet some be of two syllables, some of three, as here follow.

A foot of two syllables is fourfold.	{	A Spondee, two long,	--	
		Pyrrhic, two short,	oo	
		Trochee, one long and one short,	-o	Wāter.
		Iambic, one short and one long,	o-	Dēlight.
A foot of three syllables.	{	A Moloss, three long,	---	
		Tribrach, three short,	ooo	
		Daetyl, one long and two short,	-oo	Pōetry.
		Anapest, two short and one long,	oo-	Dōminēer.

We have no English single words which have the quantity of the Spondee, Pyrrhic, Moloss, and Tribrach ;

brach; and accordingly I have left their places vacant. And indeed in English poetry there is very small variety of feet, the Iambic being as it were sole regent of our verse; according to Mr. Brightland:

If pulse of verse a nation's temper shows,
In keen Iambics English metre flows.

But as some variety is necessary to please, our poets, maugre the genius of their tongue, do very gracefully admit sometimes a Trochee, sometimes a Dactyl, &c. into their compositions. As the same author proceeds:

Two syllables our English feet compose,
But quantities distinguish them from prose:
By long and short in various stations plac'd,
Our English verse harmoniously is grac'd.
With short and long heroic feet we raise,
But these to vary is the poet's praise;
For the same sounds perpetually disgust:
Dryden to this variety was just.

If a verse consists of six places or feet, it is called an Hexameter verse; of this sort were all the compositions of Latin and Greek heroic poetry, as the *Æneid* and *Iliad*. But if the verse has but five feet, it is called Pentameter. If a verse abounds mostly with Iambics, it is called Iambic verse; and thus it is named in respect of the other feet. The kinds of verse.

Of the several kinds of feet above set down, the Spondee and the Dactyl are the most considerable, as being the measures used in the heroic verse by Homer, Virgil, &c. These two feet are of equal time, (for two short syllables are equal to one long one) but of different motion. The Spondee has an even, strong, and steady pace, which may be compared to a trot; but the motion of the Dactyl is brisk, and resembles the nimbler strokes of a gallop. An inverted Dactyl is an Anapest, a very sprightly trot, and a motion proper to excite and enrage. The Iambic is also of a light and sprightly nature. The Trochee is of a contrary one, fit to express weak and languid motions; Of the different natures and qualities of the several kinds of feet.

as all those measures which move from long to short syllables. The Pyrrhic and Tribrach are very rapid, as the Moloss is slow and heavy. The verse is generally so ordered by the skilful poet, that it in some measure expresses the very nature and modes of the subject, by the number and sound of the feet and syllables. Of this Mr. Pope gives an elegant instance, when, to shew how heavy and dull the French monosyllable poetry is, he saith,

And ten low words oft creep in one dull line.

Which line is an instance of what he reproves; for there are indeed ten monosyllable words, which seem to creep heavily through the line, and make it dull and flat.

Of the kinds
of poetry.

There are various kinds of poetry constantly in use; the subject, peculiar characters, and a poetical description of the most considerable sorts, I shall give the reader from Mr. Brightland, Boileau, &c. And first,

Of BUCOLICS, or PASTORAL.

Of Bucolics,
or Pastoral;
and Georgics.

This sort of poetry is called Pastoral, because it is an imitation of a shepherd's life, or that of rural nymphs and swains. It is also called Bucolios from the cow-herds, &c. which were the subject of their employment: as Georgics are poems so called from husbandry and agriculture, the subjects about which they are employed.

The Pastoral that sings of happy swains,
And harmless nymphs that haunt the woods and plains,
Should through the whole discover ev'ry where
Their true simplicity and pious air;
And in the characters of maids and youth,
Unpractis'd plainness, innocence and truth.

As a fair nymph, when rising from her bed,
With sparkling diamonds dresses not her head;
But, without gold, or pearl, or costly scents,
Gathers from neighb'ring fields her ornaments:
Such, lovely in its dress, but plain withal,
Ought to appear a perfect Pastoral.

Its

Its style must still be natural and clear,
And elegance in every part appear;
Its humble method nothing has of fierce,
But hates the rattling of a lofty verse.
There native beauty pleases and excites,
And never with harsh sounds the ear affrights.

Oppos'd to this another, low in style,
Makes shepherds speak a language base and vile:
His writings flat and heavy, without sound,
Kissing the earth, and creeping on the ground.

Each Pastoral a little plot must own,
Which, as it must be simple, must be one:
With small digressions yet it will dispense,
Nor needs it always allegoric sense.
The Pastoral admits of vows and praise,
Of promises, complaints, of mirth and joys,
Congratulations, singing, riddles, jests,
Of parables, sentences, and the rest.

In Pastorals to know what rules are right,
For guides take Virgil, and read Theocrite;
Be their just writings, by the gods inspir'd,
Your constant pattern, practis'd, and admir'd.
By them alone you'll easily comprehend
How poets, without shame, may condescend
To sing of gardens, fields, of flow'rs and fruit,
To stir up shepherds, and to tune the flute:—
This of their writings is the grace and flight,
Their risings lofty, yet not out of sight.

Of ELEGY.

An Elegy is a mournful poem, a funeral song or ditty; first invented to bewail the death of a friend, the coyness or cruelty of a mistress; and to express all other plaintive, mournful and melancholy subjects and themes. In Elegy the passions of grief, despair, resentment, &c. ought to predominate. The strains should abound with frequent commiserations, complaints, exclamations, and short and proper digressions. The measure should be heroic verse, as the most solemn. The sentiments and numbers should be soft and sweet; the diction neat, clean, soft, ingenuous

Of Elegy, and
its properties.

Of POETRY.

and open, plain, modest, tender, full of the affections and the pathetic. Or thus;

The Elegy demands a solemn style,
It mourns with flowing hair at fun'ral pile,
It paints the lover's torments and delights,
A mistress flatters, threatens, or invites.
But well those raptures if you'd let us see,
You must know love as well as poetry.

The model of this poem should be made,
And every part of all its structure laid,
And all directed to some certain end,
And verse on verse perpetually depend,
And all concerted ere one line be penn'd.

No glitt'ring points, nor any nice conceit,
Should load the Elegy with foreign weight;
Passion and nature here avow their right,
And with disdain throw back that mean delight.

Remember that the diction ev'ry where
Be gentle, clean, perspicuous and clear,
Correct; the manners all along express,
In ev'ry place the passions still confess.

No cutting off the vowels must be found,
For that destroys its smooth and flowing sound.

Moreover, apostrophes, or addresses to things or persons; prosopopœia's, or feigned persons; allusions to sayings; examples from the like and unlike, and contraries; sometimes comparisons; and above all, some signification of antiquity, beautify and adorn this poem.

The LYRIC.

Of the Lyric. This is discerned and distinguished from all other parts of poetry by a peculiar suavity or sweetness, which is its characteristic. In this sort of poetry (says the Jesuit Pontan) the poet applies himself entirely to soothe the minds of men by sweetness, the variety of the verses, the exquisite elegance of the diction, the beauty and agreeable cadence of the numbers, and the description of things most delightful in their natures,

The

The subject, or substance rather, of Lyric poetry, is song or ode. The ode originally had but one strophe or stanza; but was at last divided into three parts, Strophe, Antistrophe, and Epode. For as the priests went round the altars, chanting the praises of the gods in verse; so they called their first turning to the left Strophe, and their returning on the right they called Antistrophe; and the verses sung they called Ode and Antode: at last, standing before the altar, they sang the rest, which they called the Epode. The Greeks called those odes, which were set to instruments, as the lyre, psaltery, &c. psalms; and the singing them, psalmody; but those songs or odes wherein they sang the praises of their gods, they called hymns, and the chanting them, hymnody.

Lyric poetry consists in ode or song.

The parts of an ode. Strophe, Antistrophe, and Epode.

Psalms and psalmody. Hymns and hymnody.

Sweetness is most peculiar to the Ode,
 Ev'n when it rises to the praise of God.
 To heav'n it mounts in its ambitious flight,
 And 'mongst the gods and heroes takes delight.
 Variety of numbers still belong
 To the sweet melody of ode or song.
 Th' expression should be easy, fancy high;
 That should not seem to creep, nor this to fly:
 No words transpos'd, but in such order all,
 That tho' hard wrought, may seem by chance to fall.
 No useless line in odes can find a place,
 Nor a repeated word appear with grace.
 But obscene words for ever give offence,
 And in all poetry debase the sense.
 The gen'rous style from strictest rules of art
 With grace and brave disorder may depart.

The qualities of this poem.

The PINDARIC ODE.

This sort of ode is called Pindaric, from the inventor Pindar, an antient Grecian, whom Alexander esteemed so much, that when he destroyed the city of Thebes, he spared only Pindar and his family of all the inhabitants. This sort of ode is employed in all manner of subjects, pleasant, grave, amorous, heroic, philosophical, moral, divine. Cowley was the first who introduced this sort of poetry into our tongue; and

Of Pindaric verse.

and his first stanza of his Ode on Liberty, is both a good description, and proper idea of this kind of ode, which is as follows.

An example
of Cowley's.

If life should a well-ordered poem be,
In which he only hits the white
Who joins true profit with the best delight;
The more heroic strain let others take,
Mine the Pindaric way I'll make:
The matter shall be grave, the numbers loose and free.

It shall not keep one settled pace of time,
In the same tune it shall not always chime,
Nor shall each day just to his neighbour rhyme. }
A thousand liberties it shall dispense, }
And yet shall manage all without offence, }
Or to the sweetness of the sound, or greatness of the }
(sense.) }

Nor shall it ever from one subject start,
Nor seek transitions to depart;
Nor its set way o'er stiles and bridges make,
Nor thro' the lanes a compass take,
As if it fear'd some trespass to commit,
When the wide air's a road for it.

So the imperial eagle does not stay
'Till the whole carcase he devour
That's fall'n into his pow'r;
As if his gen'rous hunger understood }
That he can never want plenty of food, }
He only sucks the tasteful blood, }
And to fresh game flies chearfully away,
To kites and meaner birds he leaves the mangled prey.

S A T I R E.

Of Satire.

Its matter.

Satire is a free, jocular, witty, and sharp poem, severely inveighing against vice, and all corrupt manners and persons; and, in short, whatever deserves our laughter or abhorrence. The matter therefore of satire is turpitude; its manner invective; and its end shame. Satire inveighs against and derides the slothful, the parasite, the loquacious, the ungrateful, the libidinous,

dinous, drunkards, the avaricious usurers, bravoës, robbers, adulterers, &c. Satire is the physician of a distempered mind, and endeavours the cure by bitter and unfavoury, yet salutary applications; if the disorder continues, it acts chirurgically, cuts, cauterizes, and spares not.

That satire be just, it ought to be general and true; **Qualities.** otherwise it degenerates into a libel, or scurrilous lampoon, and accountable to the law. It ought to be strong, and to strike powerfully; and the style and manner must be manly and smooth.

Folly and vice of ev'ry sort and kind,
That wound our reason, or debase the mind;
All that deserves our laughter or our hate,
To biting Satire's province do relate.
The slothful, parasite, affected fool,
Th' ungrateful, and the pert loquacious tool,
The lustful, drunkard, th' avaricious slave,
The noisy bravo, and the tricking knave,
Satire by wholesome lessons would reclaim,
And heal their vices to secure their fame.
The Latin writers decently neglect,
But modern readers challenge our respect;
And at immodest writings take offence,
If clean expressions cover not the sense.
Satire should be from all obscenity free,
Not impudent, and yet preach modesty.
Our freedom in our poetry we see,
That child of joy, begot by liberty;
But, vain blasphemer, tremble when you chuse
God for the subject of your impious muse;
At last, the jests which libertines invent,
Bring the lewd authors to just punishment.
Though vice and folly be keen Satire's aim,
It should not on their natures here declaim.
Good Satire comes not but from men of sense,
Wit, and sagacity, and eloquence,
Of good address, and such a poignancy,
As may consist with mirth and pleasantry.
A Satire knows no parts; but on our sins
Abruptly falls, or gradually begins:

Its use, end,
&c.

But

Of POETRY.

But this abruptness must regard the whole,
Which must its words, and manners too, controul.
Let flowing language utter all you say,
And smoothest words should sharpest thoughts convey.

Of COMEDY.

Of Comedy,
and dramatic
poetry.
Drama, what.

Comedy is one of the great parts of dramatic poetry, or that which is acted on a stage, in the manner of a play: a drama being any poetry acted by persons on a stage, and is called a play. This is the most useful, difficult, as well as the most delightful sort of poetry; of which, as I said, Comedy is one great part. Comedy is an agreeable imitation or representation of the actions, humours, and customs of common life. Its end is to deride vice and folly, and to recommend virtue, not so much by description as personal action; that spectators may see and be ashamed of the baseness and deformity of vice, in the actions and persons of others, which they do not mind or regard in themselves.

The parts of
comedy, five,
Prologue.

Protasis.

Epitasis.

Catastasis:

Catastrophe.

Comedy has five parts, viz. (1.) The Prologue, which is a speech made to the spectators before the play begins; wherein the poet is commended, the objections answered, the argument of the play declared, &c. (2.) Protasis; this is the first part of the play, in which the sum of the whole matter is related and proposed, but the end is not yet discovered: this is contained in the first, and sometimes the second act also. (3.) Epitasis, or working up of the plot, wherein the play grows warmer, the design, or action, or plot, draws on and thickens, and you see something promising. (4.) Catastasis is the full vigour and state of the plot, which is now brought to its greatest height; but here your expectation is destroyed, and the action embroiled in new troubles. (5.) Catastrophe, or the discovery or unravelling the plot; here you see all things settling again on their first foundation, and terminate in an unexpected happy issue. This employs the fifth, and sometimes both the fourth and fifth acts of the play, for there are never more nor less than five acts.

The

The plot or fable is the subject-matter of the drama, or play: an act is a part of the fable, which contains divers actions according to the diversity of the parts: and the scene is a part of an act, wherein two or more persons are discoursing and acting together. As to the persons, manners, sentiments, diction, &c. see the following verses.

The plot or
fable of the
Drama, what.

To four essential things w'assign a part,
In every comedy that's writ with art;
The fable, manners, sentiments are these,
And proper diction that must all express.
The fable is the plot that is design'd -
To imitate the actions of mankind;
But without manners these cannot be drawn,
In them the temper and the humour's shown,
As by the sentiments these are made known.
The diction is the language that does show
In words, the sentiments which from them flow.
Observe the characters of those that speak,
Whether an honest servant, or a cheat,
Or one whose blood boils in his youthful veins,
Or a grave matron, or a busy nurse,
Extorting tradesmen, careful husbandmen:
Boys must not have th'ambitious cares of men,
Nor men the weak anxieties of age.

The fable,
manners, sen-
timents and
diction.

Expose no single fop, but lay the load
More equally, and spread the folly broad.
The other way is vulgar; oft we see
A fool derided by as great as he:
Ill poets thus will one poor fop devour;
But to collect, like bees, from ev'ry flow'r
Ingredients to compose the precious juice,
Which serves the world for pleasure and for use,
In spite of faction will our favour find,
And meet with the applause of all mankind.

None can with their fix'd characters dispense;
Fools sin, if they pretend to wit or sense.
The merchant, soldier, student, miser, beau,
In their demeanour, what they are, must show.
That silly thing, men call sheer-wit, avoid,
With which our age so nauseously is cloy'd.
Humour is all, wit should be only brought
To turn agreeably some proper thought.

OF TRAGEDY.

- Of Tragedy.** Tragedy is the most sublime and useful of all dramatic poetry: in this the calamities of illustrious persons are acted by dramatic persons, to the end that the minds of the audience may be affected with pity, mercy, terror, &c. and be made aware of the disastrous occasions of those tragical events which are the substance of the play. In a tragedy it is not absolutely necessary there should be historical truth, but there must always be a probability. There are three unities in tragedy: (1.) The unity of action; the action must always be one, and not all the actions of a man's life; this must be entire, and have a beginning, middle, and end; and the whole of such a nature, as is apt to excite pity, terror, and to refine the passions in general. (2.) The unity of time; which critics differ about notwithstanding; some allowing but four or five hours, some ten, others fifteen, and Dryden twenty-four, for the time of the action. (3.) The unity of place; which requires but one scene throughout the play: though this is not observed in some of the most successful tragedies.
- The end and design thereof**
- The unities of action.**
- Time.**
- Place.**
- The parts of tragedy.** A Tragedy compleat four parts does claim:
Fable the first and principal we name;
The manners and the sentiments succeed,
And the last place to diction is decreed.
- The fable.** The Fable is of tragedy the end,
To which the grand design does wholly tend;
The poet here employs his care and art
To move the passions, and incline the heart.
But if in labour'd acts, the pleasing rage
Cannot by turns our hopes and fears engage,
Nor in our minds a feeling pity raise,
In vain with learned scenes he fills his plays.
- The manners.** The Manners next, by the dramatic laws,
As they of action are the source and cause,
Demand our study, and our utmost care;
By those the persons their designs declare,
And from each other best distinguish'd are.
- The sentiments.** The Sentiments obtain the next degree,
Tho' least in excellence of all the three.

The

The sentiments the manners do express,
But such as truth and likelihood possess.
A lie or wonder cannot entertain,
The mind's chagrin'd if the discourse be vain.

The diction must the sentiments unfold,
Which in their proper language must be told.
As noble thoughts must every where abound,
Be easy, pleasant, solid and profound;
To them surprising touches you must join,
And shew us a new wonder in each line.

The Diction.

The unites of action, time and place,
Keep the stage full, and give the play a grace.
Thus all in a just method well design'd,
Leaves strong impressions on the docile mind.

The Unites.

Of the EPIC or HEROIC POEM.

An Heroic or Epic Poem is a discourse invented with art, to form the manners by instructions, disguised under the allegory of an action, which is important, and related in verse in a delightful, probable, and wonderful manner.

Of the Heroic or Epic poem.

Or thus: it is the imitation of one action, illustrious, compleat, and of a certain magnitude or duration, which by a narration in Hexameter (or Heroic) verses, excites great men to primary and heroic virtues with admiration and delight. The Epic hath five parts, the action, fable, manners, sentiments, and diction.

Its parts.

The action ought to be, (1.) One; that is, performed by one hero, and in one continued space of time, without intermission; and such, moreover, as cannot be divided into other whole and compleat actions. (2.) Illustrious; and therefore of great and principal men and heroes; and in splendid and weighty matter. (3.) Compleat, to which none of the incidents may be wanting which are necessary to render it absolute and perfect to the end. (4.) Of a certain magnitude or duration, which is generally defined to be in the space of a year or less.

The Action.

The fable is the form, and artful representation of the action, which is the matter of the poem; the manners, sentiments, and diction, are the necessary ornaments of the fable. The fable consists of some parts plainly

Fable.

plainly necessary ; as (1.) The Exordium, or beginning ; wherein the action of the poem is proposed, the Deity invoked, and sometimes the work dedicated to some great man or friend. (2.) The connection ; which is a series of various casual events continued to that part of the work, where the action receives a favourable or unhappy turn. (3) The solution, which is all the remainder of the poem, from that turn of the action to the end.

Episodes.

The unnecessary parts of the fable are the Episodes, or under-actions ; as small digressions, relations of other matters, &c. which, though they are not an essential part, ought always to be congruous and dependent on the main action, and very pathetic.

Manners, &c.

The manners and sentiments fall under the same rules as those of tragedy ; but the diction is more sublime, noble, and figurative, and the best that language and art can produce.

The properties
of this poem in
verse.

We've told the rules which Tragedy maintain,
But the Heroic claims a loftier strain.

In the narration of some great design,
Invention, art, and fable, all must join :
Here fiction must employ its utmost grace,
All must assume a body, mind, and face.

Would you your reader never should be tir'd ?
Chuse some great hero fit to be admir'd.

In courage signal, and in virtue bright ;
Let ev'n his imperfections give delight.

Let his great actions our attention bind :
Like Cæsar or like Scipio frame his mind.

And not like Œdipus his perjur'd race ;
A common conqu'ror is a theme too base.

Chuse not your tale too full of incidents ;
Too great variety obscures the sense.

Achilles' rage alone, when wrought with skill,
Abundantly does a whole Iliad fill.

Be your narrations lively, short, and smart ;
And in descriptions shew your noblest art.

There 'tis your poetry may be employ'd ;
But trivial accidents be sure t'avoid.

Let no mean objects stay the curious sight ;
Allow your work a just and noble flight.

Be

Be your beginning plain, and take good heed
 Too soon you mount not on the airy steed;
 Nor tell your reader in a thund'ring verse,
 I sing the conqu'ror of the universe.
 What can an author after this produce?
 The lab'ring mountain must bring forth a mouse.

In the abounding treasure of his mind
 The poet does a thousand figures find;
 With these gay ornaments his story grace,
 And ev'ry thing in beauteous colours trace.
 At once he is both pleasing and sublime,
 And scorns a heavy, melancholy rhyme.

Thus Homer's works vast treasures do unfold,
 And whatsoe'er he touches turns to gold.
 All in his hands new beauty does acquire,
 He always pleases, and can never tire.
 A happy warmth he every where may boast,
 Nor is he in too long digressions lost.
 His verses without art a method find,
 And of themselves appear in order join'd.
 All without trouble answers his intent,
 Each syllable still tends to the event.
 Let his example your endeavours raise;
 To love his writings is a kind of praise.
 How great the work! Three thousand years have

Yet but three poets have this poem grac'd;
 First Homer, Virgil next, then Milton both sur-
 [pats'd, }
 [pafs'd. }

We have now viewed the noblest and most magnificent structures of the Art of Poetry: but there yet remain some low and meaner buildings and out-houses, which make, as it were, the suburbs of the art, and afford habitation to great numbers of the meaner sort of the rhyming tribe, which we shall take but very short notice of, and so leave them. The principal of these is

The EPIGRAM.

An Epigram is a short witty poem, or copy of Of Epigram.
 verses, playing on the fancies and conceits, arising
 from any kind of subjects, and whose distinguishing
 P and

Its characters
and chief pro-
perties.

and peculiar characters are brevity, beauty and point; which last is a sharp and biting turn of wit. In this Martial is a master-piece.

The Epigram, with little art compos'd,
Is one good sentence in a distich clos'd;
Though it to twenty verses may extend,
But best when it in two or four does end.

The Epigram in shortness takes delight;
And though all subjects are its proper right,
Yet each of one alone can only write.
Two parts this little whole must still compose,
Recital of the subject, and the close.
To make this poem perfect, be your care
That beauty, points, and brevity appear.

Acrostic and
Anagram.

The Acrostic is a poem or number of verses, whose property is, that the initial letters of the lines make up some person's name, title, or some particular motto. But Mr. Spectator is not certain which was the greatest blockhead, he who invented acrostic, or the inventor of the anagram; but however, he has done both the acrostic and the anagram the justice to reckon them first among the species of false wit.

An Epithalamium, what.

An Epithalamium is a nuptial song or poem: this was sung on the wedding-night; the subject of which are the joys and praises of the bride and bridegroom. Here the poet takes notice of the country, kindred, course of life and studies, the beauties of their persons, and the endowments of their mind, and celebrates them all. He dwells on the felicity of matrimony, of their nuptials in particular, and the events which brought it about. He sweetens the diction with kisses, and other conjugal amours and endearments; he introduces a chorus of deities, the Graces and the Muses, all exulting with joy, and promising to crown the new-married couple with all auspicious events. In fine, he makes the Graces put them to bed, and there leaves them to the directions of Hymen and Venus; and, without hesitation, prophesies of their future numerous offspring, and wishes them all happiness for a conclusion.

Genethliacon

Genethliacon is a birth-day ode or song; wherein the poet saith abundance of fine things concerning both the child's parents and pedigree, and the child, or new-born infant itself. The brave and heroic actions of the parents, their family or ancestors, are commemorated, and their signal virtues celebrated. The propitious influences of the Deity, the stars, the guardian angels, and especially the genius which rules the birth and attends the child through his life, are all celebrated in the most august manner. He also takes notice of the oracles, auguries, dreams of the parents, &c. which preceded the birth; and concludes with wishing the life and good fortune of the babe, and the parents all happiness and comfort therein.

Genethliacon,
or birth-day
ode.

Panegyric is a laudatory poem or speech, made before an assembly of people, and receives various epithets according to the subject-matter and design: as eucharistic, which returns thanks; encomiastic, when it is an oration of praise; parænetic, which gives instruction, &c.

Panegyric.

Palinody is a poem wherein we accumulate praises on a person whom before we had treated with aspersions and reproaches, and make a solemn recantation of our prejudices and unjust opinions.

Palinody.

Epicedium is a funeral song, which was used to be sung at the exequies, or solemnization of the funeral rites and solemnities; before the body of the deceased was inhumed. It consisted chiefly of the praises of the dead person; on the frailty and fickleness of life; the many and funebrous occasions of death; our own and others grief thereat; excitations to mourning and lamentation, not only of men; but inanimate creatures; consolations to the friends and relatives of the deceased, setting forth the happiness of the dead in being delivered from a life full of afflictions and lugubrious accidents.

Epicedium.

Nænia was a song that was sung at the funeral pile to the pipe or other music, which played while the body was consuming: herein they praised the deceased, who stirred up the people who stood by to weeping and mourning.

Nænia.

Epitaph.

Epitaph is a sort of epigrammatic poem or speech, which at first used to be pronounced at the tomb of the interred body; but since it is taken only for the inscription on the tomb, relating the name, sex, age, state, merits, honours, praises both of person and mind, the kind of death, and calling upon passengers and spectators to a serious reflection on mortality, and the lubricous state of life they are now in, and themselves taken from.

Cento.

Cento was a kind of poem made up of several sentences and pieces taken from the works of others; thus Ausonius made an epicedium or nuptial song out of Virgil's writings, and the history of our Saviour has been composed of sentences taken from Homer's Poems.

Echo.

Echo is a jocular and merry epigram, wherein the verses return the sound of the last syllables of many words in a different sense.

Of

pr



OF CRITICISM.

CRITICISM, or, as it is otherwise called, Of Criticism. Critics, is a word of Greek original, the theme whereof signifies to judge or censure, or give one's opinion of any thing; agreeable to which, these words have been appropriated to that art, skill, or science, which consists in a learned, exact, and curious examination of the words, writings, and actions of men, distinguishing what is good, just, beautiful, and praise-worthy in them; and pointing out the faults, errors, defects, and whatever is inconsistent with the rules of true and polite learning and good sense; censuring each particular with its proper character and epithet, and duly expressing the nature thereof. Definition thereof.

A critic, then, is one well skilled in judging, censuring, and characterising the actions, words, and writings of men; and capable of discovering their more secret beauties and defects, which he knows are really such according to the nature of things, which he makes his grand criterion, or rule of judgment. And such a person, when he exerciseth his art, is said to criticise upon a man, his words, or writings, &c. A critic, who.

If this definition of a critic and his art be well considered, it will appear that no small stock of abilities is requisite to entitle a man to a just claim to this excellent character, notwithstanding so many make pretensions thereto. Both art and nature must conspire to make a good critic, as well as a good poet. Great abilities requisite to a critic. As Mr. Pope has excellently well observed in the following lines.

They both alike from heav'n derive their light;
These born to judge, as well as those to write.

Hence we observe, that it is an equal absurdity to pretend to be thought a critic for the sake of a few punster no] critic.
P 3 low

OF CRITICISM.

low and quibbling censures, puns, and witticisms, upon an author, as to be esteemed a poet for scribbling a few dull lines on any notable subject. For,

In poets as true genius is but rare,
True taste as seldom is the critic's share.

Good critics
more rare than
good authors.

The same great person begins his Essay on Criticism with an observation of a like nature :

'Tis hard to say if greater want of skill
Appear in writing or in judging ill :
But of the two less dangerous is th' offence
To tire our patience than mislead our sense.
Some few in that, but numbers err in this ;
'Ten censure wrong, for one who writes amiss.

Good authors
the best critics.

Again, it is reasonable to imagine that those only are fit to be judges of authors, and their writings, who themselves are capable of composing, and writing well, and in a good taste ; and therefore the poet's admonition is very seasonable :

Let such teach others who themselves excel,
And censure freely who have written well.

The true critic's character
is an universal
one.

That of a critic is no partial, but an universal character ; for considering criticism as an art, though men may be exceeding good judges in some particular matters relating to their business and profession, they will never merit the title of critics, unless they are profoundly skilled in the knowledge of all things requisite to qualify them to judge and determine of all things, so far as to distinguish their beauties and perfections, and their faults and imperfections, which is the proper province of the art of criticism : though it must be allowed, that men may criticise best on such subjects as are most familiar to their studies, and most practised by them. 'Tis impossible we should be equally capable of judging concerning all things indifferently ; and can only pretend to a perfect mastery in one art or faculty at most, and sometimes we may come short of that : since

One

One science only will one genius fit,
So vast is art, so narrow human wit;
Not only bounded to peculiar arts,
But oft in those confin'd to single parts,

In order then to define and establish the character of an universal critic, it is necessary to consider the constituent parts, and the sources whence they are derived; these are two, viz. nature and art. Nature lays the foundation, and art raises thereon, and embellishes the superstructure.

Unerring nature still divinely bright,
One clear, unchang'd, and universal light,
Life, force, and beauty, must to all impart,
At once the source, the end, and test of art.
Art from that fund each just supply provides,
Works without show, and without pomp presides.

The parts which nature furnishes towards constituting a man a critic are very many; among which we may reckon the following as principal.

The natural parts of a critic.

First, Magnanimity, or a large capacious mind, sometimes called a greatness of soul. By this special bounty of nature a man is capable of receiving and containing a very great store of ideas of every sort, from the noblest to the meanest class. A capacious mind is the storehouse of a critic; it is the repository of his materials of art, whereby he forms his judgment, from whence his criticisms proceed. Here he finds the wondrous infinity of images and portraits of natural objects, drawn with nature's own unerring hand in miniature, by which he examines all the productions and works of art, and can soon perceive the relation between them, and point out their agreement or incongruity, and therefore can censure accordingly.

Magnanimity, or greatness of soul.

Great minds alone can the vast world contain,
And store ideal natures in the brain.
To them the great prerogatives belong
To judge and censure what is right or wrong;
And theirs, and not of little minds, the part
To shew from nature what is just in art.

A free and
easy concep-
tion.

Secondly, a clear, free, and easy conception of ideas, and their various natures, relations, and differences, is the next indispensable quality in a critical genius; that is, he must have what we generally call a clear head. A large mind of ideas, like the atmosphere of atoms, had need to be very clear and serene, that all things therein may be perceived visibly and distinct by the mind's reflection; else darkness, obscurity, and confusion, will perpetually possess the mind, and perplex it with inextricable difficulties in all its inquiries and researches.

As when thick mists or fogs obscure the air,
We, lost in error, wander here and there,
Fill'd with anxiety and wild despair;
We seek our way, and often seek in vain,
'Till Sol relucient sets us right again.

A fine and ex-
quisite taste.

Thirdly, He must be possessed with that principle which gives him a nice and true notion of what is agreeable, or disagreeable; pleasant, or unpleasant; beautiful and famous, or ugly and infamous; plausible, or despicable; with every other quality and its opposite, in all his ideas of things: and this principle we may call the standard of nature, is the grand criterion of universal criticism, and remains invariable and always the same. From this affection of nature it is that we are so much more delighted and pleased with some things than others; that some ideas transport us almost beyond our senses, and sometimes our very reason too, and fill our souls with ecstatic joys and unspeakable pleasures; that others affect us but indifferently, and are neither much desirable nor detestable; and lastly, that some affect us with very disagreeable and uneasy sensations, and cause in us an utter abhorrence, detestation, and aversion to them. Now, unless a man be truly inspired with this principle, and can, in virtue thereof, find himself nicely affected with all the various degrees of sensation from the most detestable to the most ravishing which arise from the ideas of things, he will never be able to rise above the character of a dull critic.

Fourthly,

Fourthly, A natural wisdom or sagacity is another A natural qualification necessary to constitute a critic. By this wisdom and he is enabled to make a true division of the various sagacity. parts of his ideas, which are intended as the subject of his scrutiny and criticisms; and to make proper arrangements and distributions of them, according to their different natures, kinds, and species; otherwise he can never make a just comparison in order to form a judgment concerning them; but must be perpetually puzzled and perplexed amidst his own blunders, and mistake the sense and meaning of things. It is this talent gives a man a logical head-piece, without which he must as absurdly aim at the noble title of a critic, as he endeavours to escape the odious appellation of a wretched blunderer.

'Tis native logic which must form the mind
Of him who for a critic is design'd;
Without this faculty in vain he tries
To be thought critic, or to criticise:
A diff'rent fate attends him; for, alas!
He's deem'd a blund'ring, dull, ignoble ass.

Fifthly, A good memory, tenacious of impressions A tenacious of every kind, and forming all sorts of ideas or objects, memory. is another essential in the composition of a critic. For though Mr. Pope's observation is often confirmed by experience,

That, in the soul where memory prevails,
The solid pow'r of understanding fails;

yet this is not always the case: some men are equally blessed with great memories and great understanding; and unless it were so, we might in vain expect to see, or boast of a finished critic. It is certain a man cannot become excellent in any art or science without a considerable memory; and it is as certain that criticism requires this talent in the highest degree of perfection human nature is capable of; the reason whereof may appear farther on.

Sixthly,

A fine imagination and sprightly fancy.

Sixthly, A fine imagination, and sprightly fancy, are necessary in a genuine critic. As magnanimity is the faculty of treasuring up vast stores of ideas, so imagination is the power of viewing, comparing, altering and compounding the images of objects received in our minds, into all the varieties of picture and vision, that are agreeable or delightful to the fancy. There is abundance of work for the imaginative faculty in criticism: a critic ought to be exceeding apt and ready at forming guesses, conjectures, and plausible hypotheses: where the nature, coherence, relation or reason of things, are latent and obscure, there an ingenious imagination assists much in forming the criticism, and a sprightly fancy sets it off with a peculiar grace and air. In short, this power of the mind will at least exempt him from the opprobrium of a dullard; and his conjecture will be allowed to be an artful hypothesis, when it cannot be supposed a true or just criticism. When Mr. Pope says,

Where beams of warm imagination play,
The memory's soft figures melt away;

he is to be understood of people in common, particular cases excepted; for what are great genius's, as Virgil, Milton, Newton, Locke, Addison, and Mr. Pope himself, but exceptions to the general model and standard of human nature? The faculty of fiction is almost as necessary in a critic as in a poet; the latter being in a great measure the subject of the other's art.

For gen'rous critics fan the poet's fire,
And teach the world with reason to admire.

An happiness of diction.

Seventhly, It is requisite a critic should have the happiness of a free, clear, and easy diction. The manner of expression is a matter of great importance in criticism. We are beholden to this art for the good offices it does us in explaining and discovering to us the concealed and recluse beauties and perfections of an author's performance, &c. but if this be undertaken in an uncouth, confused and obscure language, we, instead

instead of being instructed, are but doubly perplexed and confounded, and therefore little obliged to such criticisms. Not that a critic should be verbose; for

Words are like leaves; and where they most abound,
Much fruit of sense beneath is rarely found.

But his expression should be concise as well as clear; genuine, not foreign to the matter; and fertile with ideas sententious and pregnant with sense; and ever presented with a serious and instructive air.

Thus true expression, like the radiant sun,
Clears and improves whate'er it shines upon;
It gilds all objects, but it alters none.
Expression is the dress of thought, and still
Appears more decent, as more suitable.
In words, as fashions, the same rule will hold,
Alike fantastic, if too new, or old.

}

Mr. POPE.

These are the principal qualifications requisite to constitute a critical genius. If a man be thus endowed by nature, I think it is plain he is thereby rendered capable of a good understanding, a great share of learning, and consequently of becoming a man of genius, fine taste, sublimity of thought, and solidity and profundity of judgment; all which together complete the character of a critic.

But next to these natural qualities, there are certain moral dispositions, which make a man somewhat more than a mere critic, and that is, a just and good critic.

The moral
qualities of a
critic.

Learn then what morals critics ought to show,
For 'tis but half a judge's task to know.
'Tis not enough wit, art, and learning join;
In all you speak let truth and candour shine:
Without good breeding truth is disapprov'd;
That only makes superior sense belov'd.

Mr. POPE.

Truth and honesty are the primary excellencies in Truth and a critic; for he to whom the liberty is indulged of honesty.
dealing

OF CRITICISM.

dealing with men's characters, reputation, and merit, ought above all others to be supposed to have the strictest and most sacred regard to those principles, which are the eternal rules of doing justice in the way of judgment and censure. What wretched and detestable murderers of men's names and fame are those, who in their criticisms, shall, for the sake of any influence whatever, take the horrid liberty of departing from the sacred laws of truth, and violate the ties of honour and honesty!

Good critics scorn deceit, and hate a lie;
They'll dare to speak the truth, though for't they die,

It is not the low condition, the applause of another, the debasement of one's self, the favour of the honourable, or the frowns of the powerful, which can hinder an honest critic from speaking freely what he thinks is truth.

Candour and
ingenuity.

Candour is the next moral perfection in a critic of worth. This indeed is always a concomitant of truth and honour, but yet is very different from them; for a man, though he does not falsify the truth, may be disingenuous, and conceal it, and prove partial to merit; which faults are entirely prevented in a critic of a candid mind. A critic who deals ingenuously with an author, will be as careful to discover and recommend the wit and beautiful passages in any performance, as to detect and expose the faults and imperfections thereof; the former he doth with pleasure, the latter with regret.

A candid judge will read each work of wit
With the same spirit that its author writ;
Survey the whole, nor seek slight faults to find
Where nature moves and rapture warms the mind;
Nor lose, for that malignant, dull delight,
The gen'rous pleasure to be charm'd with wit.

Good-nature.

Good-nature is next among the amiable morals of a critic; it is this excellent quality which tempers all his criticisms with a sweet and generous grace and air. A kind, benevolent, and good-natured criticism, though
it

it be designed to remark upon our faults, is nevertheless agreeable and engaging; and gives us grounds to think at the same time, that the critic hath a good opinion of us, and would take a superior pleasure in criticising in our favour. A benevolent critic knows,

Whoever thinks a faultless piece to see,
Thinks what ne'er was, nor is, nor e'er shall be.

Such a critic always considers the scope and end of the author; and thinks it but reasonable to make allowance for human nature and frailties. He readily grants,

That if the means be just, the conduct true,
Applause, in spite of trivial faults, is due.

He knows moreover, that

In wit, as nature, what affects our hearts
Is not th' exactness of peculiar parts;
'Tis not a lip, or eye, we beauty call,
But the joint force and full result of all.

Longinus observes, that the productions of a great An observa-
genius, with many lapses and inadvertencies, are in- tion of Lon-
initely preferable to the works of an inferior author, ginus.
who is scrupulously exact, and conformable to all the
rules of correct writing.

Such even wits, as neither ebb nor flow,
Correctly cold, and regularly low,
That shunning faults, one quiet tenor keep,
We cannot blame indeed—but we may sleep.

Mr. Pope further observes to this purpose;

Some beauties yet no precepts can declare,
For there's a happiness, as well as care;
And nameless graces which no methods teach,
And which a master-hand alone can reach.
Great wits sometimes may gloriously offend,
And rise to faults true critics dare not mend,
From vulgar bounds with brave disorder part,
And snatch a grace beyond the reach of art.

Of critical
licence.

If

OF CRITICISM.

If then nature has liberally endowed a man with the fore-mentioned great capacities and talents, and he be at the same time a man of truth and honour, candour and good-nature, there remains only one great qualification more, to establish him a competent judge of men and things; and that is, universal learning.

The qualifications of a critic arising from art.

Literary genius.

Mathematical and mechanical knowledge.

All kind of philological learning.

Especially grammar and languages.

Art therefore puts the finishing hand to a critic, Mr. Addison observes—There is nothing more absurd than for a man to set up for a critic without a good insight into all the parts of learning. He must have a literary genius, and a true relish for all polite and learned sciences: nor is this sufficient yet; he must acquire a tolerable knowledge and acquaintance even with the mysteries of mechanical and manual arts and trades, with the phraseology and manner of operation in each. In the critic we expect to find, not only great endowments of nature, but the most ample accomplishments of arts, and universal knowledge. The business of a taylor, cobbler or tinker, may sometimes afford matter or occasion to exercise the talent of a critic as notably as the sublimer speculations of the grammarian, geometrician, theologist, or philosopher. But above all things, a person ought to have a perfect mastery of language; not only the Oriental, as Hebrew, Chaldee, Arabic, Æthiopic, &c. but the Western, as the Latin, Italian, Spanish and French, together with the Greek in all its dialects; and also the Northern languages, as the ancient Gothic, Saxon, Franc, German, Dutch or Teutonic, Danish, &c. Because without these he can never be so good a judge of philological literature in all its branches, which is the most usual subject of criticism; nor yet of his native language, which is derived from many of them; the peculiar beauties, force, and propriety of which, ought to be most illustriously displayed in a critic.

Having thus shewn that all the forces of nature and art must join to finish a critic, and also what moral qualities are requisite to denominate him a good one, I shall next briefly point out the characters of a bad critic in some notable particulars: for in this, as well as in all other arts, there are very bad performers.

If

If Mævius scribble in Apollo's spight,
There are who judge still worse than he can write.

POPE.

The first characteristic of a bad critic is want of genius, and a mind peculiarly formed for such speculations. On this account many monstrous and misshapen productions have had a birth in this province of the republic of letters. Against these Mr. Pope points his satire.

The characteristic of a bad critic, want of genius,

Some have at first for wits, then poets, past,
Turn'd critics next, and prov'd plain fools at last.
Some neither can for wits nor critics pass,
As heavy mules are neither horse nor ass.
Those half-learn'd wtlings, num'rous in our isle,
As half-form'd insects on the banks of Nile,
Unfinish'd things, one knows not what to call,
Their generation's so equivocal.

Ill-nature is the worst of all the bad qualities of a critic: they who attempt to criticise with this unhappy disposition, prove more formidable and cruel than the popish inquisitors; they seize upon the miserable author's fame and merit, and torture him without remorse. As it is impossible they should have a good opinion of another man's performance, so nothing like good-nature, ingenuity, or forgiveness, is to be expected from them. They never fail of meeting with hard quarters, who wretchedly fall under the severe lashes of their malignant tongues or pens. But as the chief end of those enormous productions of nature is to delight themselves in sporting with, and endeavouring to destroy the character and esteem of men eminent for virtue and wisdom, so they never fail of rendering themselves odious and detestable to all considerate and judicious men; and as such I leave them.

Pride, next to ill-nature, is a quality the most to be condemned in a critic. Concerning the proud censurer, hear the opinion of that excellent poet Mr. Pope.

Of

OF CRITICISM.

Of all the causes which conspire to blind
 Man's erring judgment; and misguide the mind;
 What the weak head with strongest biaſ rules,
 Is pride, the never-failing vice of fools.
 Whatever nature has in worth deny'd,
 She gives in large recruits of needful pride.
 For as in bodies, thus in souls we find
 What wants in blood and spirits swell'd with wind:
 Pride, where wit fails, ſteps in to their defence,
 And fills up all the mighty void of ſenſe!
 Thus where right reaſon drives that cloud away,
 There beamy truth ſhines with reſiſtleſs day.

Caprice and
 affectation.

The capricious and affected critic, who can reſiſt only ſome particular things, and rejects the whole for want of theſe, makes the next claſs of bad judges. Some affect to make their criterion a fine conceit, a glittering thought or point of wit; others judge a performance by the language, ſtyle, and phraſe, not attending to the ſenſe and juſtneſs of the ideas and their connections. Again, ſome admire none but foreign, others none but ancient, and others none but modern productions. Laſtly, The affectation of ſome is ſo wonderfully contrary to that of others, that ſome are to be found who can praiſe nothing but what every body praiſes; while others take as much care to be ſingular, and will rather judge wrong by themſelves, than right with the multitude. But thoſe who judge things right or wrong according as the author is of their opinion or party, or on the contrary ſide, I do not dignify ſo much as with the name of bad critics, but rather that of bigotted or prejudiced coxcombs.

Pedantry.

In the laſt place, the pedantic critic we find in the rear of this tribe. A ſmattering in learning may ſerve to make a criticaſter, as well as one in verſe a poetaſter; but both are alike diſhonourable to the ſcience. For criticiſm, like poetry, is an art which can admit no mean between very good and very bad; that is, a hypercritic and a criticaſter. It is eaſy for perſons to have learning enough to deſerve the latter epithet, but it is with much more difficulty they merit
 the

the former. In short, a pittance of learning, as it is often most hurtful to religion, so it always is to critics, in puffing the mind up with vanity and conceit, and a presumption which generally spends itself in ridicule, contempt, and ungenerous reflections on men of merit, solid judgment, and learning. To this purpose the before-mentioned celebrated poet sings:

A little learning is a dangerous thing;
 Drink deep, or taste not the Pierian spring:
 There shallow draughts intoxicate the brain,
 And drinking largely sobers us again.
 Fir'd at first sight with what the muse imparts,
 In fearless youth we tempt the heights of arts;
 While from the bounded level of our minds
 Short views we take, nor see the lengths behind;
 But more advanc'd, behold with strange surprize
 New distant scenes of endless science rise!

Having thus particularized the characters of good Rules and general instructions for critics, it may be proper next to subjoin the excellent advice and instruction which Mr. Pope gives to those who engage in works of criticism and by Mr. Pope. censure,

—But you who seek to give and merit fame,
 And justly bear a critic's noble name,
 Be sure yourself and your own reach to know,
 How far your genius, taste, and learning go;
 Launch not beyond your depth; but be discreet,
 And mark that point where sense and dullness meet.
 Nature to all things fix'd the limits fit,
 And wisely curb'd proud man's pretending wit.
 First follow nature, and your judgment frame
 By her just standard, which is still the same.
 Trust not yourself; but, your defects to know,
 Make use of ev'ry friend—and ev'ry foe.
 Be not the first by whom new terms are try'd,
 Nor yet the last to lay the old aside.
 Avoid extremes, and shun the faults of such
 Who still are pleas'd too little or too much.
 At ev'ry trifle scorn to take offence;
 That always shows great pride or little sense.

Q

Those

Those heads, as stomachs, sure are not the best,
 Which nauseate all, and nothing can digest:
 Yet let not each gay turn thy rapture move;
 For fools admire, but men of sense approve.
 Regard it not, if wit be old or new;
 But blame the false, and value still the true.
 Nor for the sake of imitation err;
 Nor chuse, for learning, to be singular.
 Think not your reputation safe, because
 Or fools admire, or vulgar give applause.
 Be thou the first true merit to befriend;
 His praise is lost, who stays till all commend.
 Of old those met rewards who could excel,
 And such were prais'd who but endeavour'd well.
 To what base ends, and by what abject ways,
 Are mortals urg'd through sacred lust of praise!
 Ah! ne'er so dire a thirst of glory boast,
 Nor in the critic let the man be lost.
 Let vice and the prophane your darts engage;
 There point your thunder, and exhaust your rage.
 Yet shun their fault, who, scandalously nice,
 Will needs mistake an author into vice.
 All seems infected that th'infected spy,
 As all looks yellow to the jaundic'd eye.
 Be silent always when you doubt your sense,
 And speak, tho' sure, with seeming diffidence.
 Some positive, persisting fops, we know,
 That, if once wrong, will needs be always so;
 But you with pleasure own your errors past,
 And make each day a critic on the last.
 'Tis not enough your counsel should be true,
 Blunt truths more mischief than nice falsehoods do.
 Men must be taught as if you taught them not,
 And things unknown propos'd as things forgot.
 Be niggards of advice on no pretence,
 For the worst avarice is that of sense.
 With mean complacence ne'er betray your trust,
 Nor be so civil as to prove unjust.
 Fear not the anger of the wise to raise;
 Those best can bear reproof who merit praise.
 Fear most to tax an honourable fool,
 Whose right it is, uncensur'd, to be dull.

'Tis best sometimes your censure to restrain,
 And charitably let the dull be vain.
 Your silence there is better than your spight,
 For who can rail so long as they can write?
 Of censure careless be, nor fond of fame,
 Still pleas'd to praise, yet not afraid to blame;
 Averse alike to flatter or offend,
 And, as not faultless, not too vain to mend.
 But where's the man, who counsel can bestow,
 Still pleas'd to teach, and yet not proud to know;
 Unbiass'd or by favour or by spight;
 Not dully prepossess'd, or blindly right;
 Tho' learn'd, well-bred; and tho' well-bred, sincere;
 Modestly bold, and humanly severe?
 Who to a friend his faults can freely show,
 And gladly praise the merit of a foe;
 Blest with a taste exact, yet unconfin'd,
 A knowledge both of books and human kind;
 Gen'rous converse; a soul exempt from pride;
 And love to praise, with reason on his side?



OF GEOGRAPHY; or the Description of the GLOBE of Land and Water.

Geography defined.

Its division into geography properly so called, and hydrography.

Proper or special geography divided into chorography and topography.

The principles of geography.

Of the general affections of the earth.

GEOGRAPHY is a description of the surface of the earth, or terraqueous globe, and all its parts; and may be divided into two great parts, viz. (1.) Geography properly so called, as it denotes barely a description of the land, or terrestrial part of the surface of the globe. (2.) Hydrography, which contains a description of the waters, or aqueous part of the earth's surface.

Proper or special geography is again divided into (1.) Chorography, which is a description of particular countries, as Great-Britain, France, &c. (2.) Topography, which is a description of particular places. Geography may again be divided into (1.) The physical part, which treats of the nature and qualities of the several parts of the earth and its appendages; as the figure, magnitude, &c. of the earth itself; of mountains, seas, rivers, &c. of beasts, birds, fishes, &c. (2.) The civil or political part, which treats of cities, towns, societies, laws, language, learning and customs, of the several people and nations of the earth.

The principles on which the science of geography depends, are of three sorts, viz. (1.) Propositions of geometry, arithmetic and trigonometry. (2.) Astronomical precepts and theorems. (3.) Experience; for the greatest part of geography is the result of the observations and experience of those who have travelled and described the several countries.

Since the globe or body of earth on which we live, is the immediate subject of this curious and most useful science, I shall first consider the more general and absolute affections thereof, and then those which are more particular. Of the first kind are, (1.) The figure or form. (2.) The magnitude or dimensions thereof.

thereof. (3.) The motion of the earth. (4.) The situation thereof in respect of the other parts of the universe. (5.) The constituent parts or substance of the earth. Of all which in their order.

As to the figure of the earth, the antients had different and very odd and absurd opinions of it. Some thought it was plain; others, that it was concave; and again some, that it was quadrangular; and others, that it was oblong, or in form of a parallelogram. Crates resembled it to a semicircle; Hipparchus to a round table; Posidonius to the form of a sling; Leucippus to the form of a drum; and others formed other vulgar and rude conceptions, and made wretched and senseless comparisons concerning it; all which were in time confuted, as the world grew wiser. When and where mathematical knowledge came to be understood, philosophy (which without it is generally the most awkward nonsense) soon convinced men that the figure of the earth was that of a round ball or globe; and this opinion was sufficiently established, and even demonstrated by many of the antients, as Pythagoras, Aristotle, Archimedes, and others; and indeed common experience and knowledge of travellers, navigators, and astronomers, does so invincibly attest the truth of the roundness of the earth by many infallible observations and arguments, that it can never more be doubted of. But though the earth, as to the general idea, be of a round or spherical form, yet the modern or Newtonian philosophy (which refines on all others) hath actually demonstrated that it is not exactly round, but spheriodical, or that of an oblate sphere or spheroid: and that the diameter of the equator, or from east to west, is greater than that of the poles, or from north to south, by about 34 miles, the proportion to each other being as 692 to 689.

Of the figure of the earth. The odd notions of the antients about it.

The true figure of the earth is roundness or sphericity.

Or rather that of a prolate sphere, or spheroid.

The magnitude of the earth is easily attainable many ways, as I have shewn in my Young Trigonometrer's Guide. For since it is known to be round, and that one degree of a great circle thereof contains 69 and a half of our statute miles, it is evident the circumference of the earth will be 25020 miles; and therefore the diameter or thickness of the earth is 7964

Of the magnitude of the earth.

miles; the surface will contain 199250205 square miles, and the solid content of the earth will be 264466789170 cubic miles.

Of the motion
of the earth
about the sun.

The motion of the earth about the sun hath been long asserted by the learned, and denied by the ignorant and enthusiast, who never fail to oppugn what they do not understand. In the dark ages of antiquity, Pythagoras was the first who discerned and maintained it; which was again lost, with all other valuable learning, for many ages, till retrieved by Copernicus, Galileo, &c. and is now demonstrated beyond all exception to equal judges of the matter. For since it is sufficiently proved, that the squares of the periodical times are proportional to the cubes of the distances from the centers of the orbits, about which the planets, both primary and secondary, perform their respective motions; and that this law obtains in all the circulating bodies of the universe; it is evident the sun would observe it also, did it really move round the earth, as it appears to do in 365 days: but that it does not observe it, is plain; for the moon moves about the earth in 27 days, and is 60 semidiameters of the earth distant from us. Now the square of 27 is 729, and of 365 is 133225; also the cube of 60 is 216000; therefore say, As 729 : 133225 :: 216000 : 39460356, the cube root of which is 340 nearly, which therefore should be the distance of the sun in semidiameters of the earth: but it is well known the real distance of the sun is above 2000 semidiameters; according to which it could not turn round the earth in less than 5196 years, if it observed the same general law which all the rest of the heavenly bodies do. Consequently the earth moves round the sun, and not the sun round it. This is called the annual or yearly motion of the earth: besides which, at the same time, it revolves about its own axis once in 24 hours, which is called the diurnal motion, and is the cause of day and night, as the other is, in part, of the seasons of the year: all which you have largely illustrated in my Philosophical Grammar.

A proof the
sun does not
move round
the earth.

The annual
and diurnal
motion of the
earth.

The earth, as
a planet, is
situated in the
third orb from
the sun.

Since then the earth is a body moving round the sun as its center, it must be esteemed a planet as well as Mercury, Venus, Mars, &c. are for the very same reason;

reason; and with respect to them obtains its place the third from the sun or center, having Mercury and Venus below its orb, and Mars, Jupiter, and Saturn, above it.

The internal substance or constitution of the earth is entirely unknown to us at all depths below the surface. Some think the central parts are possessed by fire, others say by water, but others there place an immense loadstone, from which those lesser magnets we use derive their virtue and wonderful properties, as being parts thereof, and acting in a perfect conformity to its nature: but these things are uncertain. However, certain it is that the outward shell or crust of the earth is composed of divers heterogeneous substances, of different gravities, disposed, for the most part, in the form of beds, called strata, or layers of earth, loam, clay, chalk, stones, sand, mineral and metallic ores, sulphur, salts, &c. variously intermixed together, as appears from the digging of a well at Amsterdam 232 feet deep, where the veins of the earth, &c. appeared as follows:

Of the internal substance of the earth.

Various beds, or layers of moulds and earth, compose the outward shell.

	Feet.		Feet.	An example thereof.
Garden mould	- - 7	White loam	- - - 4	
Of turf or peat	- - 9	Of dry earth	- - - 5	
Of soft clay	- - - 9	Of muddy earth	- - - 1	
Of sand	- - - 8	Of sand	- - - 14	
Of earth	- - - 4	Of sandy clay	- - - 3	
Of clay	- - - 10	Sand mixed with clay	- 5	
Of earth	- - - 4	Sea-sand with shells	- 4	
Of paving sand	- - 10	Clay	- - - 102	
Of clay	- - - 2	Loam	- - - 31	

Such is the make of the outward part of the earth, which yet is very different in different places. I now proceed to the two great parts of geography before-mentioned; and first of

Special geography, which treats of the terrestrial part of the earth's surface, or that we call land. This admits of the following divisions, viz. (1.) Continents; which are large and spacious tracts of land, comprehending divers countries, kingdoms and states,

The subject of special geography divided into Continents.

- all contiguous to each other, and uninterrupted by seas or water. Of these there are four, viz. Europe, Asia, Africa, and America. (2.) Islands; which are parts of land entirely encompassed with water; such as Great-Britain, Ireland, &c. (3.) Peninsula's; which are parts of dry land every where enclosed with water, save one narrow neck by which it is joined to the continent. (4.) Isthmus's are those necks of land which join the peninsula's to the main land, and by which people pass from one into the other. (5.) Promontories. Promontories, which are high parts of land stretching out in the sea, the extremities whereof are called capes or head-lands. (6.) Mountains; these are rising parts of dry land, well known to all without farther description.
- The waters divided into oceans.** Hydrography, which treats of the watery parts of the earth's surface, divides its subject as follows, viz. (1.) Oceans; which are those mighty collections of water that cover the greatest spaces of the earth's superficies, and flow around the continents. (2.) Seas; these are smaller collections of water, which are entirely, or for the greatest part, surrounded by land. (3.) Gulphs; which are those parts of the sea that run up into the main land, and are therewith environed, except one passage whereby it communicates with the open sea or ocean. (4.) Streights; which are those narrow passages either joining a gulph to a sea, or one part of a sea or ocean to another. (5.) Rivers; which are streams of fresh water issuing from fountains, and gliding in large channels through the countries to the sea or ocean, where they disembogue themselves. (6.) Lakes are those small collections of deep standing water, entirely surrounded by land, and having no visible communication with the sea.
- The definition of certain pre-cognita, viz. The axis of the globe. The poles.** Before we proceed to treat of the several parts of land and water above-mentioned, it will be necessary to explain the following pre-cognita of the science. (1.) The axis of the globe is an imaginary line passing through the center thereof, about which the globe is supposed to turn. (2.) The poles of the earth or globe are the two extremities of the axis, one whereof is called the North or Arctic Pole, and the

the other the South or Antarctic Pole. (3.) The horizon is that great circle which bounds our sight, and divides the globe into the visible and invisible hemispheres. (4.) The equator is that great circle which divides the globe into two equal parts, called the northern and southern hemispheres. (5.) The meridian is a great circle passing through the two poles, and divides the globe equally into the eastern and western hemispheres. (6.) Every great circle of the globe is supposed to be divided into 360 equal parts, which are called degrees; and every degree is divided into 60 other equal parts, called minutes. (7.) The ecliptic is a great circle representing the sun's annual path, and is inclined to the equator in an angle of 23 degrees and 30 minutes, both northward and southward. (8.) The tropics are two lesser circles which run parallel to the equator, and touch the ecliptic on each side; that on the north is called the tropic of Cancer, and the other on the south the tropic of Capricorn. (9.) The polar circles also run parallel to the equator, and at the same distance from the poles as the tropics are from the equator, viz. 23 degrees and a half. That circle on the north is called the arctic circle, and the other on the south the antarctic circle. (10.) Latitude is the distance in degrees from the equator towards either of the poles, and measured upon the meridian to the north or south; whence ariseth north or south latitude. (11.) Parallels of latitude are lesser circles parallel to the equator and each other, and are drawn through every 5 or 10 degrees of latitude north and south. (12.) Longitude is the distance in degrees from the first meridian, and measured on the equator from west to east. (13.) Zones are large tracts of the earth's surface, lying parallel to the equator, and encompassing the globe like broad belts; whence their name. Of these there are three kinds, viz. the torrid, temperate, and frigid zones. The torrid zone is one, and lieth between the two tropics, and is divided by the equator; it hath its name from the sun's going perpendicularly over it, and scorching and terrifying it with its heat. The temperate zones are two, one on each side the equator, being

The horizon.

The equator.

The meridian.

Degrees.

The ecliptic.

The tropics.

Polar circles.

Latitude.

Parallels of latitude.

Longitude.

Zones.

Torrid zones.

Temperate zones.

Frigid zones.

Climates.

**Number of
climates.**

being included between the tropics and polar circles. In these the sun's heat and the seasons are temperate. The frigid or frozen zones are two also, the north and the south; they lie between the polar circles and the poles, and encompass the poles around. In them the seasons have the greatest extremity of cold, whence their name. (14.) Climates are those tracts of the earth's surface which run parallel to the equator, and of such a breadth from north to south, that the length of the artificial day in one surpasseth that in the next by half an hour. Of these climates there are 24 on each side the equator, which reach to the polar circles; after which the climates are reckoned from the difference of an entire month, and are in number six; the sun being seen in the first one whole month without setting; in the second, two months; in the third, three; and so on, as you see in the following table.

A TABLE

A TABLE shewing the Parallel of Latitude, the Breadth, and the Length of Day in every Climate.

Climates between the Equator and Polar Circles.																			
Climates.	P. of Lat.			Bread.			Day.			Clim.	P. of Lat.			Bread.			Day.		
	D.	M.		D.	M.	H. M.	D.	M.	H. M.		D.	M.		D.	M.	H. M.			
1	8	34	8	34	12	30	13	59	59	1	33	18	30						
2	16	43	8	09	13	00	14	61	18	1	19	19	00						
3	24	11	7	28	13	30	15	62	25	1	07	19	30						
4	30	47	6	36	14	00	16	63	23	0	58	20	00						
5	36	30	5	43	14	30	17	64	16	0	53	20	30						
6	41	22	4	52	15	00	18	64	55	0	39	21	00						
7	45	29	4	07	15	30	19	65	25	0	30	21	30						
8	49	01	3	32	16	00	20	65	47	0	22	22	00						
9	51	58	2	57	16	30	21	66	06	0	19	22	30						
10	54	29	2	31	17	00	22	66	20	0	14	23	00						
11	56	37	2	12	17	30	23	66	28	0	08	23	30						
12	58	26	1	49	18	00	24	66	31	0	03	24	00						
Climates between the Polar Circles and the Poles.																			
1	67	31	1	00	1	Mo.	4	78	20	5	00	4	Mo.						
2	69	31	2	00	2	Mo.	5	84	00	5	40	5	Mo.						
3	73	21	3	50	3	Mo.	6	90	00	6	00	6	Mo.						

The inhabitants of the earth are variously denominated. First, according to the several meridians and parallels under which they live, they are called Antœci, Periœci, and Antipodes. Secondly, according to the diversity of their shadows they are termed Amphiscii, Periscii, and Heteroscii, of which take the following account.

The Antœci are those people which live under the same meridian, but opposite parallels. They have (1.) the same elevation of the pole, but not the same pole. (2.) They are equally distant from the equator, but on different sides. (3.) They have both noon and midnight at the same time. (4.) The days of the one are equal to the nights of the other, and vice versa. (5.) Their seasons of the year are contrary, it being winter to one when summer to the other.

Of the various denominations of the inhabitants of the globe.

The Antœci.

The

The Pericæci.

The Pericæci are those who live under the same parallels, but different meridians. They have these peculiarities: (1.) The same pole is equally elevated or depressed to both. (2.) They are equally distant from the equator on the same side. (3.) When it is noon to one, it is midnight to the other. (4.) The days of one are the complements of the other's nights, and *e contra*. (5.) They both agree in the four seasons of the year.

The Antipodes.

The Antipodes are those people who live under opposite parallels and meridians. Peculiar to them are the following particulars: (1.) Their footsteps are diametrically opposite to each other's. (2.) They have both the same elevation of different poles. (3.) They are equally distant from the equator, but on different sides, and in opposite hemispheres. (4.) When it is noon with one, it is midnight to the other, and vice versa. (5.) The longest day or night to one, is the shortest to the other. (6.) Their seasons of the year are contrary, &c.

The Amphiscii.

The Amphiscii were those people who inhabited the torrid zone; and were thus named because they cast their shadows on both sides of them, viz. north and south.

The Periscii.

The Periscii were those who lived in the frigid zones; so called because their shadows fell all around them on every point of the compass.

The Heteroscii.

The Heteroscii were those who lived on the temperate zones; and were thus called because they cast their shadows only one way, viz. north in the north temperate, and south in the south temperate zone.

A general view of the four great continents, or quarters of the world.

We come now to exhibit a general view of the four great continents, or quarters of the world, as they are very improperly called, viz. Europe, Asia, Africa, and America, as they consist of nations and kingdoms, with the following particulars, viz. (1.) The latitudes; and (2.) The longitudes between which each nation lies, and may be found in the maps. (3.) The length; and (4.) The breadth of each nation in general in English miles. (5.) The climates through which they severally extend. (6.) The chief city in each. (7.) The latitude, and (8.) longitude of the said city. All which here follow:

The

The CONTINENT of EUROPE.

N ^o .	Nations.	Lat.	Longit.	Len.	Br ^{dth}	Climate.	Chief City	Lat.	Longit.
1	Norway	57 00 72 00	22 00 50 00	1600	300	11. 12. 13, &c.	Bergen	61 00	24 15
2	Sweden	56 00 69 00	32 00 55 00	660	780	9. 10. 11. 12.	Stockholm	59 26	39 05
3	Denmark	26 00 34 00	54 30 58 00	270	180	10. 11.	Copen- hagen	56 13	32 30
4	Muscovy	45 10 71 00	46 00 105 00	1630	1500	8. 9. 10. 11. 12. 13.	Moscow	55 25	63 00
5	Germany	45 30 54 30	24 10 37 12	540	510	7. 8. 9. 10.	Vienna	48 14	37 05
6	Poland	48 00 58 20	34 30 53 30	780	600	9. 10. 11.	Cracow	49 56	40 47
7	France	42 30 51 10	12 10 26 30	520	450	6. 7. 8.	Paris	48 45	21 30
8	Spain	36 15 44 30	8 5 21 30	620	480	5. 6. 7.	Madrid	40 25	13 40
9	Italy	38 15 46 30	25 30 39 00	760	134	6. 7.	Rome	41 51	34 20
10	Turkey in EUROPE.	36 30 49 20	36 00 53 00	770	660	5. 6. 7. 8.	Constan- tinople	43 00	54 20

The CONTINENT of ASIA.									
N ^o	Nations.	Lat.	Longit.	Len.	Br th	Climate.	Chief City	Lat.	Longit.
1	Tartary	37 30 74 04	77 10 163 00	3000	2250	6 to 27	Cambalu	* * * *	* *
2	China	20 30 41 10	118 00 141 00	1380	1260	3. 4. 5. 6.	Pekin	39 40	133 36
3	India	08 12 40 00	92 00 131 00	1680	1690	2. 3. 4. 5. 6.	Agra	26 30	98 20
4	Persia	25 40 44 30	70 30 97 00	1440	1260	4. 5. 6. 7.	Ispahan	31 45	69 30
5	Natolia	35 00 44 00	48 00 68 00	720	400	6. 7.	Bursa	41 49	57 30
6	Arabia	12 00 34 00	53 00 80 00	1380	1080	2. 3. 4. 5.	Medina	24 50	59 10
7	Syria	33 30 38 30	61 00 68 30	560	200	5. 6.	Aleppo	36 10	56 30
8	Euphrat. Provinces.	* * * *	* * * *	* *	* *	* *	Bagdat	33 30	62 30

The CONTINENT of AFRICA.

N ^o .	Nations.	Lat.	Longit.	Len.	B ^r th	Climate	Chief City	Lat.	Longit.
1	Egypt	21 10 30 00	52 06 62 40	650	310	3. 4.	Cairo	29 40 51 30	
2	Barbary	24 40 35 00	04 16 52 10	2300	380	4. 5.	Fez	33 30 14 00	
3	Bildul-gerid	22 30 52 40	02 00 55 00	2040	300	4. 5.	Dara	27 00 08 42	
4	Zaara	21 00 28 00	02 00 50 00	2340	330	3. 4.	Tegaa	21 51 06 00	
5	Negroland	10 00 23 10	00 10 46 20	2280	600	2. 3.	Tombut	14 50 08 30	
6	Guinea	04 10 11 40	03 00 30 00	1320	360	1. 2.	Benin	07 30 05 05	
7	Nubia	09 30 23 00	42 00 57 00	840	570	2. 3.	Dancala	17 30 32 00	
8	Ethiop. { Inf. { Sup.	9 N. 00 35 S. 00	35 00 45 00	2640	900	1 N. to 5 S.	Monomo- apa	5 45 39 00	
9		24 S. 00 18 N. 00	45 00 69 00	1200	750	3 N. to 3 S.			

<i>The CONTINENT of AMERICA.</i>									
N ^o	Nations.	Lat.	Longit.	Len	Brdth	Climate	Chief City	Lat.	Longit.
1	<i>Mexico.</i>	8 50 30 00	259 00 297 00	2520	480	2. 3. 4.	<i>Mexico</i>	19 00	270 00
2	<i>Granada</i>	27 00 40 00		1140	780	5. 6.	<i>St^a Fee</i>	36 00	260 00
3	<i>Florida</i>	26 50 40 00	276 00 297 00	1000	600	5. 6.	<i>Coca</i>		
4	<i>Terra Canadensis</i>	30 00 62 00	290 00 320 00	1500	1920	5 to 15.	<i>Boston</i>	42 40	310 00
5	<i>Terra Firma</i>	3 20 11 30	297 30 330 00	1260	480	1½	<i>St^a Fee de Bagota</i>	3 30	
6	<i>Peru</i>	25 30 1 00	390 30 307 10	1440	480	1. 2. 3	<i>Lima</i>	12 20	
7	<i>Land of the Amazons</i>	2 N. 00 17 S. 00							
8	<i>Brasil</i>	1 00 23 00	322 00 346 30	1600	1380	1. 2. 3	<i>S Salvador</i>	12 20	
9	<i>Chili</i>	25 30 44 00	392 00 306 00	950	480	4. 5. 6	<i>St. Jago</i>	34 00	
10	<i>Paraguay</i>	12 00 37 00	307 10 337 40	1560	1500	2. 3. 4. 5.	<i>Assumption</i>	25 30	

In this synopsis of the four continents, I have expressed only the greater parts of which they consist, and which are inhabited and known to us; whence some considerable tracts in America, as Terra Arctica, Antarctica, Magellanica, &c. are here passed by, as not coming under the conditions of such a view. I shall now exhibit another synopsis of all the lesser kingdoms, principalities, states, dutchies, circles, provinces, and countries comprehended under those larger heads, and into which they are divided; together with the metropolis or chief city in each province, and the latitude and longitude thereof.

The

The Subdivisions of the Continents of EUROPE.

NORWAY is divided into
Five Governments.

Chief City. | Lat. | Longit.

<i>Bahus</i> _____	<i>Bahus</i> _____	58	14	31	40
<i>Aggerbus</i> _____	<i>Anslo</i> _____	60	30	29	00
<i>Bergen</i> _____	<i>Bergen</i> _____	61	00	24	15
<i>Drontheim</i> _____	<i>Drontheim</i> _____	65	24	30	35
<i>Wardhus</i> _____	<i>Wardhus</i> _____	70	45	52	00

SWEDEN comprehends Seven Countries.

<i>Sweden proper</i> _____	<i>Stockholm</i> _____	59	26	39	05
<i>Gothland</i> _____	<i>Calmar</i> _____	57	06	36	32
<i>Schonen</i> _____	<i>Lunden</i> _____	56	44	33	22
<i>Lapland</i> _____	<i>Torneo</i> _____	66	03	44	00
<i>Finland</i> _____	<i>Abo</i> _____	60	23	43	33
<i>Ingria</i> _____	<i>Notteburg</i> _____	59	52	34	00
<i>Livonia</i> _____	<i>Riga</i> _____	56	54	45	34

DENMARK contains

The Peninsula of <i>Jutland</i> , comprehending	{ <i>North Jutland</i> ,	<i>Wiborg</i> _____	56	47	28	52
	{ <i>South Jutland</i> ,	<i>Sleswick</i> _____	55	57	29	24
The Isles of —	{ <i>Zeland</i> _____	<i>Copenhagen</i> _____	56	13	32	30
	{ <i>Funen</i> _____	<i>Odenfee</i> _____	55	52	30	10
And other small ones.						

MUSCOVY or RUSSIA contains

Chief Southern Provinces,	<i>Smolensko</i> _____	<i>Smolensko</i> _____	54	31	55	42
	<i>Novograd Sewerski</i> _____	<i>Novog. Sew.</i> _____	57	16	56	24
	<i>Czernikow</i> _____	<i>Czernikow</i> _____	51	48	55	00
	<i>Ukrain</i> _____	<i>Kiow</i> _____	50	42	53	20
	<i>Worotin</i> _____	<i>Worotin</i> _____	54	10	62	00
	<i>Resan</i> _____	<i>Resan</i> _____	54	30	65	05
	<i>Moscow</i> _____	<i>Moscow</i> _____	55	25	63	00
	<i>Twer</i> _____	<i>Twer</i> _____	56	35	60	20
	<i>Rhosthow</i> _____	<i>Rhostow</i> _____	67	10	63	25
	<i>Jarastlow</i> _____	<i>Jarastlow</i> _____	57	35	63	30
	<i>Susdal</i> _____	<i>Susdal</i> _____	56	35	62	25
	<i>Wolsdimer</i> _____	<i>Wolodimer</i> _____	51	00	67	10

Muscov. Tartary. Chief Northern Provinces.	Muscov. Lapland	Kola	69	25	56	30
	Kargapol	Kargapol	61	25	64	10
	Dwina	Archangel	64	50	65	10
	Condora	Wirgatoria				
	Obdora	Beresof				
	Permski	Perma-Weliki	62	34	81	40
	Nisi Novogrod	Nisi-Novog.	58	00	69	25
	Wologda	Wologda	59	05	65	10
	Novogrod-Weliki	Novog. Weliki	58	10	55	18
	Pleskow	Pleskow	57	25	50	30
	Samoieda					
	Siberia	Tobalsko	58	15	81	50
	Dauri	Nerzinskoy	53	00		
	Kamsatka					
	Bulgaria	Bulgar				
	Astracan	Astracan	17	00		

GERMANY is divided into Ten Circles.

Belgium	Holland	Amsterdam	52	29	24	00
	Flanders	Bruxelles	50	54	23	36
Westphalia		Munster	52	00	27	12
Lower Saxony		Hamburg	53	57	29	20
Upper Saxony		Wittenberg	51	54	33	02
Lower Rhine		Heidelberg	49	17	28	27
Upper Rhine		Francfort	50	03	28	12
Franconia		Nuremberg	49	24	31	11
Suabia		Ausburg	48	14	37	57
Bavaria		Munick	47	58	31	36
Austria		Vienna	48	14	37	05

POLAND contains the following Provinces, &c.

The Dukedom of Lithuania	Wilna	54	31	47	14
The Province of Volibnia	Kiou	50	42	53	12
The Province of Podolia	Caminiack	48	50	47	46
The Dukedom of Courland	Mittaw	57	00	44	00
The Dukedom of Samogitia	Rosinie	55	15	44	48
The Province of Polaquia	Bielha	55	36	56	35
The Province of Little Russia	Lemberg	49	36	45	00
The Kingdom of Prussia	Dantzick	54	13	40	42
The Dukedom of Warsovia	Warsaw	52	07	42	05
Proper Polonia	Cracow	49	56	40	47

FRANCE

FRANCE contains Twelve Governments.

<i>Picardy</i> —————	<i>Amiens</i>	49	54	21	26
<i>Normandy</i> —————	<i>Rouen</i>	49	26	20	02
<i>Isle of France</i> —————	<i>Paris</i>	48	45	21	30
<i>Champaigne</i> —————	<i>Troyes</i>	48	07	23	17
<i>Britanny</i> —————	<i>Rennes</i>	48	03	16	30
<i>Orleanois</i> —————	<i>Orleans</i>	47	44	20	42
<i>Burgundy</i> —————	<i>Dijon</i>	43	37	24	05
<i>Lionois</i> —————	<i>Lions</i>	45	24	24	08
<i>Guienne and Gascony</i> —————	<i>Bordeaux</i>	44	50	17	50
<i>Languedoc</i> —————	<i>Tholouse</i>	43	29	19	48
<i>Dauphiné</i> —————	<i>Grenoble</i>	44	54	25	04
<i>Provence</i> —————	<i>Aix</i>	43	04	24	40

SPAIN with PORTUGAL contains

The Lordship of * <i>Biscay</i> —	<i>Bilboa</i>	43	47	14	22
The Principality of * <i>Austria</i>	<i>Oviedo</i>	43	23	11	05
The Kingdom of <i>Gallicia</i> —	<i>Compostella</i>	43	00	08	16
The Kingdom of * <i>Portugal</i>	<i>Lisbon</i>	38	45	07	37
The Kingdom of * <i>Algarve</i>	<i>Tavira</i>	37	00	09	14
The Province of <i>Andalusia</i> —	<i>Seville</i>	37	30	11	14
The Kingdom of <i>Granada</i> —	<i>Granada</i>	37	28	13	55
The Kingdom of <i>Murcia</i> —	<i>Murcia</i>	38	04	16	34
The Kingdom of <i>Valencia</i> —	<i>Valence</i>	39	25	17	15
The Principality of * <i>Catalonia</i>	<i>Barcelona</i>	40	34	20	33
The Kingdom of <i>Arragon</i> —	<i>Saragossa</i>	41	35	17	00
The Kingdom of <i>Navarre</i> —	<i>Pamplona</i>	42	52	16	06
The Province of <i>Old Castile</i>	<i>Burgos</i>	46	55	21	14
The Province of <i>New Castile</i>	<i>Madrid</i>	40	25	13	40
The Kingdom of <i>Leon</i> —	<i>Leon</i>	42	44	11	08

ITALY contains the Dominions of

The Church, or <i>Peter's Patri.</i>	<i>Rome</i>	41	51	34	20
The Kingdom of <i>Naples</i> —	<i>Naples</i>	40	56	36	15
The Dutchy of <i>Milan</i> —	<i>Milan</i>	44	55	29	13
The Republic of <i>Venice</i> —	<i>Venice</i>	45	20	34	04
The Dukedom of <i>Savoy</i> —	<i>Chambery</i>	45	04	25	24
The Principality of <i>Piedmont</i>	<i>Turin</i>	44	34	27	26
The Dukedom of <i>Tuscany</i> —	<i>Florence</i>	43	20	32	10
The Republic of <i>Genoa</i> —	<i>Genoa</i>	43	53	29	00
The Dukedom of <i>Mantua</i> —	<i>Mantua</i>	44	52	31	10
The Dukedom of <i>Montferrat</i>	<i>Casale</i>	44	40	28	17
The Dukedom of <i>Modena</i> —	<i>Modena</i>	44	14	31	32

R 2

The

The Dominions mark'd (*) belong to the King of Portugal.

The Dukedom of <i>Reggio</i> —	<i>Reggio</i>	44	18	31	04
The Dukedom of <i>Parma</i> —	<i>Parma</i>	44	24	30	40
The Dukedom of <i>Placentia</i> —	<i>Placenz</i>	39	48	11	50
The Dukedom of <i>Massa</i> —	<i>Massa</i>	43	24	30	36
The Dukedom of <i>Mirandola</i> —	<i>Mirandola</i>	44	35	31	38
The Republic of <i>Lucca</i> —	<i>Lucca</i>	43	13	31	38
The Bishoprick of <i>Trent</i> —	<i>Trent</i>	45	48	31	24

TURKEY in EUROPE comprehends

* <i>Hungary</i> —	<i>Buda</i>	47	38	40	15
<i>Transilvania</i> —	<i>Hermanstat</i>	46	46	45	48
<i>Walachia</i> —	<i>Targovisco</i>	45	54	47	38
<i>Moldavia</i> —	<i>Soczow</i>	47	44	48	30
<i>Little Tartary</i> —	<i>Kaffa</i>	47	20	61	21
<i>Romania</i> —	<i>Constantinople</i>	43	00	54	20
<i>Bulgaria</i> —	<i>Sophia</i>	43	25	47	12
<i>Servia</i> —	<i>Belgrade</i>	45	20	42	34
<i>Bosnia</i> —	<i>Saraio</i>	44	54	40	30
<i>Slavonia</i> —	<i>Posega</i>	45	46	39	42
<i>Croatia</i> —	<i>Whibitz</i>	45	18	37	44
<i>Dalmatia</i> —	<i>Spalatro</i>	44	00	38	50
<i>Greece</i> —	† <i>Salonichi</i>	41	37	47	00

I shall now give a short account of the air, foil, manners of the people, religion, universities, language, commodities, &c. of the several countries on the European continent. For their several governments, I shall refer the reader to the title of History.

Of Norway.

In Norway the air is intensely cold, and the mountains always covered with snow. Most of the country is nothing but rocks, mountains, and woods. Their trade lies in fish, furs, train-oil, pitch, masts, deals, cables, copper, hides, cheese, &c. The people are hardy, laborious, strong, and courageous, plain in their temper, just in their dealings, and civil to strangers. Their religion is Lutheranism, and in some parts popery. Here are three bishopricks. Their language is various; Icelandic, Teutonic, High-German, and French.

Sweden

* The greatest part of Hungary now belongs to the emperor of Germany. † The ancient Thessalonica.

Sweden enjoys a clear, dry, cold, yet pure and very wholesome air. Their seasons are altogether winter or summer. The mid-land country is indifferent fertile, and they have some fruitful valleys. The Swedes are naturally strong and vigorous, grave and reserved; yet idle, invidious, and self-opinionated. Their women are fair and witty. Their trade lies in metals, ox-hides, furs, pitch, tar, rosin, tallow, honey, masts, deals, oak, &c. Their religion is Lutheranism and popery. They have eight bishopricks, and two universities. Their language is a dialect of the Teutonic; the gentry speak High-Dutch and French in perfection. Of Sweden.

In Denmark the air is also cold, but sweet and wholesome in the country. Here likewise are but two seasons, summer and winter. The soil is pretty fertile in corn, fruit, and vegetables. The Danes are tall, straight, and handsome; but mean-spirited, cheating, and mistrustful, subject to apoplexies and epilepsies. Their trade is in fish, furs, skins, deals, masts, armour, pitch, tar, oil, iron, &c. They are generally Lutherans, but some papists. They have two universities, and five bishopricks. Their language is Teutonic, High-Dutch, and French. Of Denmark.

Muscovy is very hot, temperate, or very cold, according to the situation of its parts from south to north. The soil is also very different, but, in general, is overgrown with woods and forests; they have some marshy plains and good corn-land towards the south. The people are of a very healthful constitution, and long-lived; robust, and strong-built, but not tall; cruel and ignorant, yet very conceited. Their commodities are furs, fish, pot-ashes, hemp, soap, honey, Russia leather, elk hides, tallow, wax, train-oil, caviere, flad, iron, &c. Their religion is according to the Greek church in general. Their language is near a-kin to the Sclavonian and Polish. Of Muscovy.

Germany likewise being of so great an extent from north to south, hath a different temperature of air in its several parts. The soil is generally rugged, and either filled with lakes and marthes, or covered with extensive woods; in some places there is very good corn and pasturage land. The Germans are reckoned Of Germany.

luxurious, hospitable, valorous, and patient of labour; remarkable for integrity, and hating flattery and dissimulation. They export various metals, allum, flesh, quick-silver, armoury, &c. They profess popery in general; though there are many Lutherans and Calvinists among them. In this great empire are thirty-six universities and fifty-six bishopricks. They speak the high and low Dutch and Walloon languages.

Of Poland.

Poland is situated in the temperate zone, but yet has great extremity of cold to the north. The soil for the most part is champaign and open, in some places it has great woods and forests, and some considerable mountains, lakes, and marshes. The Poles are fair, largely made, of yellow hair; are civil, affable, brave, sincere, jealous of their honour and liberty, and exceed most Europeans for vivacity of spirit, strength of body, and long life. Their trade lies in honey, wax, amber, rosin, furs, oak, wainscot, masts, deals, salt-petre, cordage, pot-ashes, opium, vitriol, lapis lazuli, metals, &c. They are generally bigotted papists, some part Lutherans and Calvinists. They have four universities and fourteen bishopricks. Their language is a dialect of the Sclavonic.

Of France.

France is for the most part very temperate, and rather too warm than cold. The soil produces every thing necessary for the use of man. The French are remarkable for levity of temper; they are generous, prodigal, sprightly, daring, yet faint-hearted; they have good heads for invention, and are docile in learning arts and sciences. The commodities of this country are many, as corn, flax, wool, salt, fish, wines, coral, skins, alamodes, silks, linen, iron, &c. Their religion is popery. They have twenty universities, eighteen archbishopricks, and a hundred and nine bishopricks. The language is a compound from the antiënt Gallic, German, and Latin tongues.

Of Spain.

Spain and Portugal have generally a very pure and calm air, but extremely hot in summer. The soil is in many places dry, barren, and abounding in woods and mountains; in others productive of rich fruit and wines. The people are soft, lascivious, jealous, yet impotent in regard of venery; grave, devout, and zealous in religious matters; cruel towards religious,

but

but merciful towards civil offenders. Their trade is in honey, sugar, oil, metals, wine, rice, raisins, oranges, lemons, almonds, cork, marble, salt, &c. They are the most zealous papists. Spain hath eight archbishopricks, forty-two bishopricks, and twenty universities. Portugal has three archbishopricks, nine bishopricks, and three universities. The Spanish language is derived from the antient Latin; and the Portuguese from the French and Spanish, especially the latter.

Italy is said to enjoy an healthful and temperate air, Of Italy. except in the Land of the Church, where it is thick and dangerous. The soil is naturally very fertile, and produces the finest of corn, wines, and fruits. The woods are here continually green, and the mountains and vales most pleasant in their kinds. Italy has been called the garden of Europe. The Italians are of a middle stature, tender, cunning, polite, complaisant, eloquent, and affect praise and pomp of every sort; are given to dissimulation, jealousy and revenge, and are the most bigotted devotees in the world. Their chief commodities are wines, corn, rice, silks, velvets, sattins, grograms, fustians, allum, minerals, metals, precious stones, coral, &c. Their religion is popery in the grossest degree. Besides the popedom, there are two patriarchates, thirty-four archbishopricks, above two hundred and thirty bishopricks, and sixteen universities. Their language is the old Latin mixed with that of the Goths and Vandals.

Hungary is said to have a very unwholesome air to Of Hungary; breathe in, on account of the moorish ground and lakes. The soil is fruitful in corn, roots, and fruits; and affords excellent pasturage. The Hungarians are more addicted to wars than arts; are strong, well-made, valiant and daring, but cruel and insulting to captives. The commodities are copper, iron, quicksilver, antimony, salt, and the various produce of the soil. They are generally papists; but here are also Lutherans, Calvinists, Jews, and Mahometans. Here are two archbishopricks, and six bishopricks. The language they speak is peculiar to themselves.

Little Tartary is allowed to have a temperate air, Of Crim- but yet unhealthful to breathe in. The soil is very Tarty.

different, abounding here with grain and fruit, and there with marshes and barren mountains. The Crim-Tartars are of vigorous and robust bodies, patient of hardships, good soldiers, just to each other, but not to strangers. Their food is horse-flesh, and mare's-milk. Their commodities are slaves, leather, skins, furs, &c. Their religion is Mahometanism, though Christians of various sorts are intermixed with them. Here are two bishopricks. Their language is the Scythian, or pure Tartaresque.

Of Greece.

Greece, and the other provinces of Turkey in Europe, have, in general, an happy situation, and enjoy a pure and temperate air. The soil is very fertile in most parts, and affords all the necessaries of life. The Turks are men of a swarthy complexion, robust bodies, of a good stature, of great integrity, civil, charitable, and zealous of their religion; yet are addicted to some detestable vices not to be named among Christians. Their commodities are raw silks, pernocochi, oil, Turkey leather, cake soap, honey, galls, cottons, anniseed, carpets, mohair, camblets, grograms, and other rich Turkish commodities. The established religion of these provinces is Mahometanism; but here are many Jews and Christians, who have a patriarch at Constantinople, and several archbishopricks and bishopricks. In Greece the language used by the Christians is the vulgar Greek, and that used by the Turks here and in other parts is the Turkish, which is (originally) the Sclavonian, with some alterations.

On the Continent of ASIA.

Of Tartary.

Tartary (which alone is much larger than all Europe) is divided into five great parts, viz. Zagathay; Cathay, Turquestan, Tartary Proper, and Tartary Desert. The air is very different in different parts. The soil, for the greatest part, is very barren, being every where encumbered with unwholesome marshes, and uninhabited mountains and desarts. The Tartars are swarthy, strong, middle-sized, have broad faces, hollow eyes, thin beards, thick lips, flat noses, and an ugly mien. They are rude and barbarous;
stroll

stroll about in tents, living on rapine, eating the flesh and drinking the blood of their enemies. Their trade is in fable, martins, silks, camblets, flax, musk, cinnamon, rhubarb, &c. They are generally Pagans, though here are some Mahometans, Jews, and Christians. Their language has some affinity with that of the Crim-Tartars and the Turkish language.

China is divided into seventeen provinces, viz. Of China. Leaotung, Corea, Xantung, Peking, Xansi, Honan, Xensi, Nanking, Chekiam, Kiamsi, Fokien, Hunquam, Canton, Quamsi, Queicheu, Yunnan, Suchuen. The air is temperate, except towards the north, where it is sometimes excessive cold. The soil is generally very rich and fertile, insomuch that they have two or three harvests in a year: it abounds with corn, wine, and all kinds of fruit. The Chinese are for the most part fair, short-nosed, black-eyed, and of very thin beards. They are esteemed ingenious, and lovers of sciences, but intolerably conceited. The commodities of China are gold, silver, precious stones, quick-silver, porcelain dishes, silk, cottons, rhubarb, sugar, camphire, musk, ginger, China-wood and ware, &c. The Chinese are gross idolaters; here are also Mahometans and Christians. Their language has no likeness to any other in nature, pronunciation, or way of writing.

India has a threefold division, viz. (1.) Indostan, Of India. or empire of the Great Mogul, containing the kingdoms of Delli, Agra, Cambaja, Bengala, &c. (2.) The peninsula within the Ganges, containing Malabar, Decan, Golcond, Bisnagar, and Coromandel. (3.) The peninsula without the Ganges, containing the kingdoms of Malacca, Siam, Martaban, Cambodia, Cochinchina, Pegu, Arracan, Ava, Tonquin, Laos. These kingdoms lie in the torrid zone for the most part, and therefore must needs be very hot; but the soil is generally very rich and plentiful in all kinds of fruits and various grain. The Indians are very different in their manners and customs in so great an empire; they are tall, strong, and almost black; ingenious in arts, civil of behaviour, and pretty just in their dealings. Their commodities are aloes, musk, rhubarb, civets, indigo, laique, gums, amber, minerals,

nerals, metals, spices, rich manufactures of silk, cotton, &c. and most sorts of drugs. The inhabitants are gross idolaters; their languages are very numerous and different, and of which we know but very little.

Of Persia.

Persia contains thirteen provinces. Sinda, Macran, Sigestan, Sablestan, Chorostan, Estarabad, on the east; Tabristan, Chirwan, Adirbeitzan, Iraca-Agemi, on the north; and Chusistan, Faristan, Kerman, on the south. The air is temperate towards the north, but very hot in the summer towards the south. The soil is also different, being barren in the northern parts, but exceeding fertile and pleasant on the south of mount Taurus, producing all kinds of corn, fruits, and wines. The Persians are naturally great dissemblers, flatterers, and swearers; proud, passionate, and revengeful; given to pastimes; but yet are said to be just and honest in their dealings, and civil to strangers. Their commodities are rich silks, carpets, tissues, gold, silver, seal-skins, goat-skins, alabaster, metals, myrrh, fruits, &c. Their religion is Mahometanism, with some difference from the Turks. Their language has a great tincture of the Arabic, and is esteemed the modish tongue of Asia.

Of Natolia.

Natolia (formerly called Asia Minor) is now divided into four provinces, viz. Natolia Proper, Amasia, Caramania, and Aladulia. The air of Natolia is in some places pure and healthful, in others extremely gross and pestilentious. The soil is extraordinary fertile, but lies too much uncultivated. The inhabitants of this large country are chiefly Turks and Greeks. Their commodities are raw silks, goats hair, cotton, cordovans, calicuts white and blue, wool, tapestries, soap, and divers sorts of drugs. The established religion is Mahometanism; but here are many Christians of the Greek church, as well as others. The prevailing languages in these countries are the Turkish and vulgar Greek.

Of Arabia.

Arabia is divided into three great parts, viz. Beriar, or Arabia Desert; Baraab, or Arabia Petriæ; and Ayman, or Arabia Felix. The air of this country is very hot, as being in part in the torrid zone; and the

the soil is indicated by the names Desert, Petraea or stony, and Felix or happy; one part being overspread with mountains of sand, the other with rocks, and the latter is exceeding fertile in most places. The commodities here are coral, pearl, onyx-stones, balm, myrrh, incense, gums, cassia, manna, and several other drugs and spices. The Arabians are now an ignorant, treacherous, and barbarous sort of people, most of them idle vagabonds and robbers; but those of Arabia Felix are said to be civil and honest in their deportment to all persons. Their religion is the imposture of Mahomet, who was a native of this country. Their language (viz. the Arabic) I have already described; it is now very corruptly spoken among the Arabs, and many other people thereabouts.

Syria comprehends the three districts of Syria Proper, Phoenicia and Palestine. The air is here pure and serene, and very wholesome to breathe in, but very warm in summer. The soil is here exceeding kind, fat, and fertile in most places, abounding with large and pleasant plains. The inhabitants are chiefly Turks and Greeks, with many Jews and Armenians. The trade of Aleppo consists in silks, camblets, gall-nuts, cotton, mohair, soap, galls, jewels, spices, drugs of all sorts, &c. The religions here are Mahometanism established, Christianity and Judaism allowed, as being the country which antiently gave rise to both. The language of the country is the Turkish; the Europeans residing here speak the Lingua Franca.

Of Syria.

Diarbeck, Turcomania, and Georgia, make the remaining part of Turkey in Asia. These provinces lie between the Euxine and Caspian seas, and on the river Euphrates. The air is temperate, pleasant, and healthful in general. The soil affords excellent pasturage on the banks of Tigris and Euphrates, and in other places variety of fruits and grain. The people are of different manners and tempers in the different provinces; they export or barter with their neighbours, pitch, fruits, silk, and such like commodities. The prevailing religion is that of the Armenians. The Christians

Of the Euphratian provinces.

OF GEOGRAPHY.

Christians in Asia have three patriarchs, viz. of Jerusalem, Alexandria, and Antioch; besides two Armenians, and one Nestorian at Mosul in Diarbeck. These have under them various archbishops and bishops; but notwithstanding this, Christianity here is in a pitiful plight, groaning under the Turkish yoke, and distracted with various sects and heresies, as Armenians, Jacobites, Maronites, Nestorians, Melchites, &c.

On the Continent of AFRICA.

Of Egypt.

Egypt is divided into four parts, viz. Erife, or Lower Egypt; Bechira, or Middle Egypt; Salrid, or Upper Egypt; and the coasts of the Red Sea. The air is extremely hot, and esteemed very unwholesome, being infested with noxious vapours from the fat and slimy soil of the earth, which is occasioned by the overflowing of the Nile, and which is thereby rendered exceeding fertile and plentiful of all sorts of grain. The Egyptians are of a low stature, are tawny and spare; they are reputed great cowards, luxurious, cunning, cruel, and treacherous; and much addicted to divination. The commodities are sugar, flax, rice, corn, fruits, linen, cloth, salt, balsam, senna, cassia, and other drugs. The religions here are Mahometanism, Christianity, and Judaism; but mostly the former. The common languages are the vulgar Arabic and Turkish; but the Cophti Christians still retain the antient Egyptian tongue, especially in their religious rites.

Of Barbary.

Barbary contains six kingdoms, viz. Morocco, Fez, Algiers, Tunis, Tripoli, and Barca. The air is pretty temperate, and healthful to breathe in. The soil is fertile in corn and fruits, though it abounds in woods and mountains. The Barbarians are said to be inconstant, crafty, unfaithful, active of body, impatient of labour, and covetous of honour. Some are addicted to learning, others to merchandize, and many to piracy. The chief commodities are honey, wax, oil, sugar, flax, hemp, hides, cordevants, dates, almonds, mantles, &c. The established religion is Mahometanism, and their language in most places is the

the Arabesque, and old African tongue, or a corrupt dialect thereof.

Bildulgerid contains eight provinces, viz. Barca Of Bildulgerid. Desart, Bildulgerid Proper, Zeb, Tegorarin, Segelmese, Tafilet, Darha, Teflet. The air is very hot, yet very wholesome to breathe. The soil is generally barren and sandy; but here are low valleys of corn, and abundance of dates. The inhabitants, besides the natives, are chiefly Arabs, who follow their trade of robbing, &c. The commodities of this country are few, chiefly corn, cattle, dates, and indigo. They who know any thing of religion profess the doctrine of Mahomet. The language of the natives is little known; the Arabs use their own.

Zaara, or the Desart, contains seven provinces, Of Zaara. viz. Zanhaga, Zuenziga, Targa, Lempta, Berdoa, Borno, Goaga. The air is exceeding hot, but very wholesome to breathe in. The soil is dry and sandy, and so barren, that it is difficult to live or travel here. As for the people, their commodities, religion and language of this country, they are much the same with those of Bildulgerid, but more wretched of the two.

Negroland comprehends the kingdoms or provinces Of Negroland of Biafar, Melli, Mandinga, Gago, Guber, Zegzeg, Zanfara, Gangara, Cassena, Cano, Agades, Tombut, Gualata, Genehoa; with the people of Jallofi, Cafanga and Bijago. This country being wholly within the torrid zone, the air is very hot, yet very healthful; and the soil very rich and fertile in corn, herbs, and metals. The Negroes are a people of a black complexion, very ignorant, rude and barbarous, addicted to luxury and beastly pleasures. Their commodities are ostrich-feathers, gums, amber, gold, redwood, civet elephants teeth, &c. The natives are gross idolaters; and others Mahometans. The languages of this great country are various, and little known to us.

Guinea is divided into three great parts, viz. (1.) Of Guinea. The kingdom of Benin. (2.) Guinea Proper, containing the ivory coast, Quaqua coast, and gold coast. (3.) The coasts of Maleguette. The air of this country is extremely hot, and very unwholesome to strangers.

strangers. The soil is very fertile, and produces the choicest of grains and fruit. The natives are of the blackest complexion, go naked generally, and are mostly a cheating, proud, lazy, and thievish people. The chief commodities are gold, ivory, hides, wax, ambergrease, Guinea pepper, red-wood, sugar, civet, &c. Their religion is Paganism; and their languages many, the chief of which is called Sungai.

Of Nubia.

Nubia is properly a part of Ethiopia Superior. The air is here extremely hot, being seldom qualified with rain. The soil is said to be very fertile near the Nile; but elsewhere barren, and cumbered with mountains of sand. The Nubians are reported to be strong, courageous, cunning, laborious, warlike and wealthy people. Their traffic is in gold, ivory, civet, sugar, arms, &c. Their religions here are Paganism and Mahometanism. Their language is peculiar to themselves, yet hath some affinity to the Arabic and Chaldean tongues.

Of Ethiopia Superior.

Ethiopia Superior contains the empire of the Abyssines, and the coasts of Abex, Ajan, and Zanguebar. The air of this country is very hot, except in some low valleys. The soil is very fertile in some parts, and over-run with sandy mountains and formidable rocks in others. The people are esteemed to be lazy, ignorant, and treacherous in general, though some are ingenious and religious. The commodities are gold, metals, gems, corn, cattle, salt, flax, wines, sugar-canes, &c. Here are Pagans, Jews, and Mahometans, but the body of the natives is Christian. The Ethiopic language has some affinity with the Hebrew and Chaldee.

Of Ethiopia Inferior.

Ethiopia Inferior contains the empires of Monœmugi, and Monomotapa; the kingdoms of Angola, Congo, Loango, and Biafar; and the country of the Caffers. The air of these countries is extremely hot in general, but is qualified with daily showers and winds. The soil is various in different parts, some being more fertile than others, and some entirely barren. The people are of divers sorts also, and are generally esteemed a swarthy, dull, and savage people, especially those called Caffers or Hottentots. The commodities of these kingdoms are gold, silver, ambergrease,

grease, pearls, musk, rice, millet, cattle, lemons, citrons, ivory, oil, &c. The inhabitants are all in general Pagans of the grossest notions; and their languages are peculiar to the several nations.

On the Continent of AMERICA.

Mexico or New Spain contains three audiences, Of Mexico, or
New Spain.
viz. Guadalajara, Mexico province, and Guatalama.

The air of this country is pretty temperate, though in the torrid zone. The soil is very fertile in grain, fruits, herbs and ores. This country is in the hands of the Spaniards. The natives are said to be a civil, docile, and faithful people. The commodities are wool, cotton, sugar, silk, cochineal, feathers, honey, balm, amber, salt, tobacco, tallow, hides, ginger, and divers sorts of drugs. The Spaniards have here one archbishoprick and eleven bishopricks. The general language is the Spanish, and the religions Paganism and popery.

Granada or New Mexico is a large country, but Of Granada,
or New
Mexico.
of no certain extent or division. The air is very temperate and healthful, but attended with frequent hurricanes, besides thunder and lightning. The soil, so much of it as is known, is generally dry, sandy and barren. The inhabitants are said to be tolerably civil, addicted to hunting, and to understand agriculture. The commodities of this country are very few, cattle being the chief or only thing they trade in. The Spaniards residing here use their own religion and language; but the natives are gross idolaters.

Florida enjoys a very temperate air, and a soil Of Florida.
wonderfully fertile in grain, herbs, and fruits. The Floridans are tall, well-proportioned, warriors, and go almost naked; and though naturally white, they paint themselves of an olive colour. The commodities here are few and costly, viz. gold, silver, pearls, and furs. The Spanish colonies here use their own religion and language, the natives being gross idolaters, worshipping the sun and stars.

Canada comprehends, on the north of St. Lawrence Of Canada.
river, Canada Proper, New Britain, and New France;
on

on the south, the territories of New Scotland, New England, New York, New Jersey, Pennsylvania, Maryland, Virginia, Carolina. Of these countries (especially the six or seven latter ones) the air is generally temperate and wholesome, and the soil rich and fertile; though in some parts it is barren enough. The English are masters of the greatest part of these countries. The commodities are fish, grain, masts, deals, iron, tar, beaver skins, furs, &c. from New England: tobacco, beaver, otter, rattoon, deer and elk-skins, and other costly furs, from New York: whale-oil and fins, beaver, monkey, rattoon, and martin skins, with provisions, from New Jersey: horses and pipe-staves to Barbadoes, from Pennsylvania: tobacco, hemp, flax, wood, hops, rape-seed, madder, furs, elk-skins, &c. from Maryland: skins of deer, beaver, and other wild beasts, but especially tobacco, from Virginia: skins of otters, bears, and leopards, with oil, olives, cotton, and divers sorts of drugs, from Carolina. The English residing here profess the different persuasions among Protestants; and the natives are idolaters, and have particular jargons of speech.

Of Terra Firma.

Terra Firma contains eleven governments, viz. Caribana, Guiana, Panama, Carthagena, St. Martha, Rio de la Hacha, Venezuela, Andalusia, Paria, Granada, Popayan. The air is extremely hot, yet wholesome; the soil very fertile, when well manured. The natives are tawny, robust, healthful, long-lived, and go naked above the middle. The commodities of this country are gold, silver, and other metals, balsam, rosin, gums, long-pepper, emeralds, sapphire, jasper, &c. Here is one Spanish archbishoprick, and four bishopricks. The natives are gross idolaters, and have great diversity of languages and dialects in each language.

Of Peru.

Peru is divided into six provinces, viz. Quito, Peru, Los Charcos, Pacamores, Los Quixos, and Posto. The air is in some parts extremely hot, in others sharp and piercing. The soil is the richest of all the Spanish plantations, abounding with exceeding high mountains, and large and pleasant valleys. The Peruvians are some of them simple and very ignorant, others more ingenious, but addicted to dissimulation and

and sodomy. The commodities are vast quantities of gold and silver, costly pearls, cotton, tobacco, cochineal, and other drugs. Here is one Spanish archbishoprick, and five bishopricks. The natives are mostly idolaters, but some are converted to Christianity. They generally speak the Spanish tongue.

The Land of the Amazons is very little known; Of the country of the
the air is temperate, and the soil fertile, so far as it is yet discovered. There are on the banks of the river Amazons. Amazone about fifty nations of fierce savage people, said to eat human flesh. The commodities are reckoned gold, silver, sugar, ebony, cocoa, tobacco, &c. Their religion is Paganism, and their languages unknown.

Brasil is divided into fourteen captainries, viz. Para, Of Brasil.
Maragnan, Siara, Rio Grande, Parabia, Tamaraca, Pernambuco, Seregippe, All Saints Bay, Los Ilheis, Porto-Seguro, Spiritu-Santo, Rio Janeiro, St. Vincent. The air is very temperate and wholesome, though in the torrid zone. The soil is extraordinary fertile. The Brasilians are said to be a cruel, thievish, and revengeful people in general, but those who are civilized prove ingenious. The commodities are red or Brasil wood, sugar, amber, rosin, balm, tobacco, train-oil, confectures, &c. The natives have but a faint notion of God or religion; and though they have divers languages, it is said they cannot pronounce the three letters, L, F, R.

Paraguay is divided into seven provinces, viz. Of Paraguay:
Guayra, Paraguay Proper, Parana, Uraguay, Rio de la Plata, Tucuman, Chaco. The air is said to be very temperate and healthful; the soil very fertile in corn, wine, and fruits. The people are very big and tall, yet nimble and agile; they are said to be less savage than many other Indians; laborious, and revengeful of wrongs. The commodities are gold, silver, brass, iron, sugar, amethyfts, &c. Here is one Spanish archbishoprick, and four or five bishopricks. The religion of the natives is gross idolatry, and their language an harsh and unpleasant jargon.

Chili is divided into three governments, viz. Chili Of Chili.
Proper, Chicuito, and Chili Imperial. The air in summer is very warm and temperate, but in winter
S excessively

excessively sharp and piercing. As to the soil, the mountainous parts are generally dry and barren, but the valleys are exceeding fertile in maize, wheat, and other grain. The people are white, tall, courageous and warlike. The commodities are gold, silver, maize, corn, honey, ostriches and metals. The unconverted Chilians are the grossest idolaters of all the Americans, the chief object of their worship being the devil, whom they call Eponamon, i. e. Powerful. Most of them use the Spanish tongue, and some their ancient jargon.

Having thus given a succinct account of those parts of the four continents which are known, I pass over the unknown parts to the principal islands, mountains, &c.

ISLANDS of EUROPE.

Of the European islands.

The principal of these are, (1.) The Britannic isles, Great Britain and Ireland; with the lesser ones of Man, Anglesey, Wight, Jersey, Guernsey, Alderney, &c. and the clusters of islands called the Orcades, the Shetland, and the Hebrides. (2.) The Scandinavian islands, or those belonging to Sweden, Denmark and Norway; as Gothland, Zealand, Funen, &c. (3.) Iceland, a large island, subject to the crown of Denmark. (4.) The Azores, which are in number nine, possessed and inhabited by the Portuguese. (5.) The Mediterranean islands, viz. Yvica, Majorca, Minorca, Sardinia, Corsica, Sicily, Malta, Crete or Candia, Cyprus, &c. (6.) The numerous isles in the Archipelago, the Ionian sea, &c. most of which are subject to the Turks.

ISLANDS of ASIA.

Of the isles of Asia.

These are, (1.) The isles of Japan; as the famous isle of Japan itself, Tonfa, Bungo, &c. (2.) The isle of Formosa, lying near the middle of the eastern coast of China. (3.) The Philippine isles; as Luconia, Mindanao, Tendaye, with several small ones. (4.) The Moluccoes; the chief whereof are Gilolo, Ceram, Celebes.

Celebes. (5.) The islands Des Larrons, or of thieves. (6.) The Sunda islands, the chief of which are Borneo, Sumatra, and Java. (7.) The Maldives, a cluster of very small isles in the Indian sea. (8.) Ceylon, a famous isle near Cape Comorin, in the Indian sea, abounding in most sorts of spices.

ISLANDS of AFRICA.

These are (1.) Madagascar, the largest and most considerable of all, lying off the east coast of Ethiopia. (2.) The islands of Cape Verde, which are ten in number, and situate to the west of Negroland. (3.) The Canary islands; which are fourteen in number, among which are the noted isles of Teneriff, Ferro, and Canaria; these lie near the coast of Bildulgerid. (4.) Madeira, noted for its excellent wine. It is situated over-against the kingdom of Fez in Barbary. (5.) St. Helena, Ascension isle, St. Thomas, Zocotora, and divers other small ones up and down in the Atlantic and Indian oceans.

Of the isles of Africa.

ISLANDS of AMERICA.

These are, (1.) California, the largest island in the world, lying west of New Mexico, in the great South Sea. (2.) Newfoundland, a very large island, in the possession of the English; it lies before St. Lawrence Bay, in north latitude 50 degrees. (3.) The Antilles, which contain many single islands very considerable, as Cuba, Hispaniola, Porto-Rico, belonging to Spain, and Jamaica to the English. They also comprehend several clusters of small islands; as (4.) The Caribbee isles; the chief of which are St. Christopher's, Antego, Montserrat, Barbadoes, &c. (5.) The Lucayos isles, mostly belonging to the Spaniards. (6.) The Sotovento isles, lying along the north coast of Terra Firma, and belonging to the Spaniards. (7.) Bermudas, or the Summer islands, belonging to the crown of England. (8.) Terra del Fuego; this is an island separated from the most southern parts of America by the streights of Magellan, and of which our knowledge is very uncertain.

Of the isles of America.

OF GEOGRAPHY.

MOUNTAINS.

Of the chief mountains in the world. Of mountains, some are extended to a vast length, rise very high, and are called ridges or chains of mountains; the chief whereof are, (1.) The Dol-

phrino hills, between Sweden and Norway. (2.) The Hyperborean mountains, in the north part of Muscovy. (3.) The Caparthian mountains, in the south part of Poland. (4.) The Pyrenæan hills, between Spain and France. (5.) The Alps, between Italy, and France and Germany. (6.) The Apennine hills, dividing Italy into east and west. (7.) Mount Taurus, reaching from east to west of all Asia. (8.) Imaus, in Tartary. (9.) Caucasus, between Tartary and the Mogul's empire. (10.) The Libyan mount, between Zaara and Egypt. (11.) Mount Atlas, between Barbary and Bildulgerid. (12.) The Mountains of the Moon, in Ethiopia. (13.) The Andes, extending north and south through the whole length of South America.

Others are single, and remarkable for their exceeding height, as the Pike in Teneriff, &c. But others are still more remarkable for being volcano's, or such as have terrible eruptions of fire, coals, smoak, &c. As Ætna, in Sicily; Vesuvius, in Naples; Hecla, in Iceland; with many others in several islands and parts in the torrid zone.

OCEANS.

Of the oceans. The mighty body of waters which overwhelms, by far, the greatest part of the earth's surface, is divided into several oceans, viz. (1.) The Hyperborean on the north; and, (2.) The vast Western ocean, on the west of Europe. (3.) The Tartarian and Chinesean oceans on the north and east; and, (4.) The Indian, and part of the vast Southern ocean, on the south of Asia. (5.) The Ethiopic and Atlantic ocean, and part of Mer del Zur, on the west and south of Africa. (6.) The vast Oriental ocean on the east. And, (7.) The great Pacific ocean on the west of America.

SEAS.

S E A S.

Of seas (properly so called) there are but few; Of the seas.
viz. The Mediterranean sea, included between Europe on the north, Barbary and Egypt on the south, and part of Asia on the east and north-east. (2.) The Baltic sea, inclosed with Sweden on the west, Lapland on the north, part of Poland on the east, and part of Germany on the south. (3.) The German sea, inclosed with Great-Britain on the west, and Scandinavia on the east. (4.) The Irish sea, or rather Streights, or Channel, between Ireland and Great-Britain. (5.) The Euxine sea, inclosed with part of Europe on the north and west, and part of Asia on the south and east. (6.) The Caspian sea, or rather the greatest lake in the world, as being entirely surrounded with land, on the continent of Asia. All other seas besides these are but parts of the oceans.

As for gulphs, streights, lakes, rivers and bays, they are so numerous, and of so little importance in a bare rehearsal of their names, that the reader can expect to find a distinct account of them only in larger treatises on this subject.



OF CHRONOLOGY, or the Doctrine of TIME.

Chronology defined.

CHRONOLOGY is a science which has for its subject the Doctrine of Time. Or, it is a discipline which is conversant about the nature, properties, parts, and use of time, in a civil sense.

The nature of time defined.

The nature of time is of a physical consideration; and therefore time is defined to be the duration of things; and the parts of time the intervals of succession of phenomena; and the idea we have thereof consists in the order of successive perceptions. This definition agrees to time absolutely considered; but time, in a relative sense, is that which is measured or estimated by certain motions, either equal, as clocks, watches, &c. or unequal, as of the sun, or other heavenly bodies; and this is otherwise called apparent or vulgar time.

Of the parts of time.

The parts of time in use among us are minutes, hours, days, weeks, months, years, ages, cycles, and periods. A view and explanation of the nature and uses of these make the first part of this curious and excellent science of Chronology.

The true method of treating of time.

It appears to me to be a preposterous method of treating the doctrine of time, to begin with minutes, hours, &c. and not (as the nature of the thing requires) with that measure of time, which is the original and standard on which the rest depend; or the whole, of which the others are but parts and subdivisions.

A year defin'd

This original, standard, or integral measure of time, then, is what we call a year. A year is the space or part of time or duration measured by one entire revolution of some celestial body in its orb, viz. the sun or moon.

Of the solar tropical year.

That which is measured out by the revolution of the sun in the ecliptic, is called the solar year; and this is properly the natural or tropical year, which contains 365 days, 5 hours, 48', and 57".

But

But the space of time in which the sun departing from any fixed star, comes to it again, is called the *sydereal year*, which contains 365 days, 6 hours, 9'. 14".

The lunar year is the space of time in which the moon performs 12 compleat revolutions about the earth, called *lunations*; and contains 354 days, 8 hours, 48'. 38".

Years are distributed into astronomical and civil; the astronomical year is that which results from, or depends on, the principles of astronomy: such are those above described. For the tropical year depends on one of the cardinal points, viz. the equinox or solstice; and the *sydereal year* on a fixed star; and both on astronomical observation and calculation.

The civil year is that in common use among several nations of the world; it is either solar or lunar. The civil solar year is again either common or *bissextile*. The common year is reckoned to contain only 365 days, the odd hours and minutes being here neglected. The *bissextile year*, otherwise called *leap-year*, consisteth of 366 days; the day over and above the common year being called the *intercalary* or *bissextile day*.

This intercalation of a *bissextile day* was first appointed by Julius Cæsar, to be made every fourth year, to the end the civil year might keep pace with the tropical year. For the six hours, whereby the latter exceeded the former, in four years make a whole day; which therefore was then added to the 23d day of February, which was the sixth of the calends of March in the Roman calendar. In this year therefore they reckoned that sixth day twice (in Latin *bis sextus dies*) and thence came the name *bissextile* or *leap-year*. But in our almanacks we add that *intercalary day* at the end of the said month, every fourth year.

The civil lunar year is common or *embolismic*. The common lunar year consists of 12 *lunations*, which are finished in 354 days, at the end of which the year begins again. The *embolismic year* was that wherein a month was intercalated, to adjust the lunar to the solar year. This intercalation or *embolism* was used by the Jews, who went by the lunar motions in their accounts.

Of the original of the Julian year, or old style.

The Romans also at first used this embolimic lunar year, which was settled by Romulus their first king, and consisted only of ten months, or 304 days; and thus coming short of the true lunar year by 50 days, and of the solar year by 61, this year became vague and unfixed: which Numa Pompilius, the second king, observing, added two other months, January and February, and thereby made the year consist of 12 months, or 355 days. But this improvement not being sufficient to adequate the year to the motion of the sun or moon, and keep the seasons even and steady, Julius Cæsar instituted the civil solar year, by adding 10 days to every common year of Numa's, and one day extraordinary to every fourth year, as aforesaid. This therefore was ever since called the Julian year or account, and old style, which is now disused by us in England, but still regarded by most Protestant countries, except those of Holland and Germany.

Of the original of the Gregorian year, or new style.

But since the Julian year of 365 days and 6 hours exceeds the true solar year by 11 minutes, this excess in 131 years amounts to one day; and in the time of pope Gregory XIII. was grown into 10 days. The Nicene council, A. D. 325, having fixed Easter to the next Sunday after the full moon, which came next after the vernal equinox, which was then on the 20th of March, it happened that in the year of our Lord 1582, pope Gregory observed, that the said fault of the Julian year had cast the equinoxes 10 days, and the full moons 4 days more backward, than they were at the time of the said council; viz. to the 11th of March, and 1st of April. Thus the feast of Easter, and consequently all other moveable feasts, became unfixed, and attended with great disorder. To remedy this, the pope ordered 10 days to be taken from October that year, that thus the equinox might be reduced to the 21st of March; and, to keep it there, ordered, that, since in the Julian account every 100th year is a bissextile, and so 4 in 400 years, in the ages to come, 3 of those 4 leap-years would be changed to common years, and that only one 100th year in every 4 centuries should conclude with a bissextile. This correction adjusts the year and seasons near the truth, and

is called the Gregorian account, or new style, and is used by the papists every where.

The first and principal division of the year is into parts we call months; and these are of as many kinds as are the years of which they are parts; viz. astronomical and civil. The astronomical month, which is also the natural one, is properly a lunar month, or the space of time in which the moon runs through the zodiac; and is either (1.) Synodical, called a lunation; which is the time contained between the moon's parting from the sun at a conjunction, and returning to him again; which is in 29 D. 12 H. 44'. 3". (2.) Periodical month; which is the space of time wherein the moon makes one compleat revolution, or returns to the same point of the zodiac whence she departed; this contains 27 D. 7 H. 43'. 8". (3.) The illuminative month is the time between the appearance of two new moons next each other, or the time a moon is observed to shine; which is always variable.

The solar month is improperly thus called, as being only the space of time in which the sun runs through one sign of the zodiac: which months, one with another, contain each 30 D. 10 H. 29'. 5".

Civil months are those which are framed to serve the uses of civil life; and are different in different nations and countries of the world. These come very near the quantity of astronomical months, both lunar and solar: whence came the distinction of civil lunar and civil solar months. A civil lunar month consisteth alternately of 29 and 30 days through the year. Those of 29 days were called Cavi, or Hollow; and those of 30, Pleni, or Full. Civil solar months consisted alternately of 30 and 31 days; except one of the 12, which every 4th year was to have 30 days, in other years 29 only.

The names, quantities, &c. of the civil months used by several nations to compose their years or calendars, may be seen in the following tables.

Julian

Julian Year.	Days	The Ancient Roman Year.	Days	The Antient Grecian Year.	Days
1 <i>January</i>	31	<i>Januarius</i>	29	<i>Hecatombæon</i>	29
2 <i>February</i>	28	<i>Februarius</i>	28	<i>Metagitnion</i>	30
3 <i>March</i>	31	<i>Martius</i>	31	<i>Bædromion</i>	29
4 <i>April</i>	30	<i>Aprilis</i>	29	<i>Mæmactærian</i>	30
5 <i>May</i>	31	<i>Maius</i>	31	<i>Pyanepsion</i>	29
6 <i>June</i>	30	<i>Junius</i>	29	<i>Posideon</i>	30
7 <i>July</i>	31	<i>Quintilis</i>	31	<i>Gamelion</i>	29
8 <i>August</i>	31	<i>Sextilis</i>	29	<i>Antheſterion</i>	30
9 <i>September</i>	30	<i>September</i>	29	<i>Elaphebolion</i>	29
10 <i>October</i>	31	<i>October</i>	31	<i>Munychion</i>	30
11 <i>November</i>	30	<i>November</i>	29	<i>Thargelion</i>	29
12 <i>December</i>	31	<i>December</i>	29	<i>Scirrhophorion</i>	30
Days in Year 365		Days in Year 355		Days in Year 354	
This is a Solar Year, and there remains 5 Hours and 49 Minutes towards an Intercalar Day for Biſſextile, or Leap-Year.		This was the Year which firſt began with Martius, till Numa added 2 more Months, January and February; and after Julius Cæſar added 10 Days to equate it with the Solar Year.		This is a Lunar Year uſed at Athens, and required 11 D. 5 H. 49' to equate it with the Solar Year.	

Z 9	The Jewish Civil Year.	Days	The Syrian Year.	Days	The Arabic and Turkish Year.	Days
1	<i>Tisri</i>	30	<i>Tisbrin I.</i>	31	<i>Muharram</i>	30
2	<i>Marchesvan</i>	29	<i>Tisbrin II.</i>	30	<i>Saphar</i>	29
3	<i>Casteu</i>	30	<i>Canun I.</i>	31	<i>Rabia I.</i>	30
4	<i>Tebeth</i>	29	<i>Canun II.</i>	31	<i>Rabia II.</i>	29
5	<i>Shebath</i>	30	<i>Shabat</i>	28	<i>Jomada I.</i>	30
6	<i>Adar</i>	29	<i>Adar</i>	31	<i>Jomada II.</i>	29
7	<i>Nisan</i>	30	<i>Nisan</i>	30	<i>Rajab</i>	30
8	<i>Jiar</i>	29	<i>Aiyar</i>	31	<i>Shafban</i>	29
9	<i>Sivan</i>	30	<i>Haziram</i>	30	<i>Samadan</i>	30
10	<i>Tamuz</i>	29	<i>Tamuz</i>	31	<i>Shawal</i>	29
11	<i>Ab</i>	30	<i>Ab</i>	31	<i>Dulkaadah</i>	30
12	<i>Elul</i>	29	<i>Elul</i>	30	<i>Dulheggia</i>	29
Days in Year		354	Days in Year		365	Days in Year 354
In the Embolismic Year after Adar they add the month Ve-Adar of 30 Days.			This is equal to our Julian Year.		This Year is Lunar, and the same with the Grecian and Jewish Year.	

Z 9	The Persian Year	Days	The Egyptian Year.	Days	The Ethiopian Year.	Days
1	<i>Ajrudiab Meb</i>	30	<i>Thoth</i>	30	<i>Majecaran</i>	30
2	<i>Ardibajcht Meb</i>	30	<i>Paophi</i>	30	<i>Tykymt</i>	30
3	<i>Cardi Meb</i>	30	<i>Atihr</i>	30	<i>Hydar</i>	30
4	<i>Thir Meb</i>	30	<i>Chojac</i>	30	<i>Typhas</i>	30
5	<i>Merded Meb</i>	30	<i>Tybi</i>	30	<i>Tyr</i>	30
6	<i>Schabarir Meb</i>	30	<i>Mechir</i>	30	<i>Jacatit</i>	30
7	<i>Mehar Meb</i>	30	<i>Phamenoth</i>	30	<i>Magabit</i>	30
8	<i>Aben Meb</i>	30	<i>Parmuthi</i>	30	<i>Mijazia</i>	30
9	<i>Adar Meb</i>	30	<i>Pachon</i>	30	<i>Ginbat</i>	30
10	<i>Di Meb</i>	30	<i>Pauni</i>	30	<i>Syne</i>	30
11	<i>Beben Meb</i>	30	<i>Ephiphi</i>	30	<i>Hamle</i>	30
12	<i>Affirer Meb</i>	30	<i>Mesori</i>	30	<i>Habase</i>	30
Embo- lism.	<i>Musteraka</i>	5	<i>Epagomenæ</i>	5	<i>Pagomen</i>	5
Days in Year		365	Days in Year		365	Days in Year 365

The division
of a month
into weeks
and days.

A month is divided into four parts, which we call weeks, and each week is again made to consist of seven parts, called days. Of these months there are thirteen in a Julian year, and one day over; of weeks there are fifty-two, and of days three hundred and sixty-five, as before observed.

Definition of
a day.

A day is either the space of time contained between the moments of the sun's rising and setting, or in which he makes one entire revolution. The first is called an artificial day; the latter a natural day, and by the Greeks Nychthemeron, because it included the night and artificial day together.

Artificial and
natural.

Of artificial
days.

The artificial day is ever variable and unequal; for the sun's course being always oblique to the horizon, and always varying, causeth that the time of his stay, or his duration above the horizon, which is the artificial day, is ever variable and changing, and that in reality for one half of the year, or the time the sun is passing from one solstice to the other, increasing or decreasing. This is evident from the Doctrine of the Sphere.

Of natural
days.

Astronomical
or civil.

The natural day is either astronomical or civil: the astronomical day is the time which flows between the sun's leaving any meridian and its return to the same; that is, the space of time in which the earth makes one revolution about its axis, which is twenty-four hours, and the time answering to the degrees it hath described in its annual orb during that revolution. Now this additional motion is always unequal, both because of the obliquity of the plane of the ecliptic to the plane of the equator, and also because of the oval figure of the earth's motion; but one time with another it is $59^{\circ} 8''$ per day, which is performed in $3^{\circ} 0'' 32'''$. Therefore a mean astronomical day consists of 24 H. $3^{\circ} 0'' 32'''$.

Its mean mea-
sure.

Of the civil
day.

The civil natural day is that which is measured out by the equable motion of machines, as clocks, watches, and other automata. This is always equal, and contains 24 hours.

The time
when several
nations begin
their civil day.

The beginning of this natural civil day is various according to the different usage of people. The ancient Greeks, Jews, Bohemians, Silesians, with the modern Italians, and Chinese, commence the civil day at

at sun-set. The antient Babylonians, Persians, Syrians, with the modern Grecians, &c begin their day from sun-rise. The Ausonians, Egyptians, Romans, with the modern English, French, Dutch, Germans, Spaniards and Portuguese, at midnight. And lastly, the Umbrians and Arabians, with the modern astronomers, begin their day at noon. But in this affair you meet with some uncertainty and confusion, in what relates to antiquity.

An hour is the 24th part of a day; and are equal or unequal. Equal hours are those by which the whole time of a civil natural day and night is divided into 24 equal parts. Unequal hours are those by which the term of an artificial day is divided into 12 parts, and the night into as many. These are also called temporary or planetary hours, on a superstitious account not worth mentioning.

The hours of an astronomical day, or those from noon to noon, are not precisely equal, but the difference is so small that it is not worth minding, and makes no error in uses of common life. To reduce unequal hours to equal ones, say; As 12 hours is to the space of an artificial day, so is one equal hour to its correspondent unequal one.

The hours are denominated of the people who use them. Thus Babylonian hours commence their order from sun-rising; Italian hours from sun-setting; astronomical hours from noon or mid-day; and by some the unequal hours are stiled Jewish, because that nation used them.

An hour is divided into 60 equal parts, called minutes or scruples; and each minute into 60 seconds; these again into 60 thirds, and so on. These divisions are well enough known. But the Jews, Chaldeans, Arabians, and other eastern people, divide the hour into 1080 scruples, because there is no number capable of so many divisors as this, which therefore they thought most fit for use. But the number 1080 is 18 times 60, and so one minute contains 18 Jewish scruples.

The larger spaces of time which have found distinction among mankind, are, (1.) A lustrum, which is a certain space of time antiently applied to civil uses,

Of hours,
equal and
unequal.

To reduce un-
equal to equal
hours.

Various deno-
minations of
hours.

Of minutes
and scruples.

Of the Jewish,
&c. scruples.

Of the larger
time.
A lustrum.

as

Seculum.

Ævum.

Olympiads.

A cycle,
what.

The solar
cycle.

The domini-
cal letters.

Of the begin-
ning of the
year in regard
of the days of
the week.

The dominical
letters shift
their course in
a retrograde
order.

as sacrificing, taxations, letting farms, &c. And though formerly it was reckoned to consist of 5 years, yet chronologers do now repute it only as 4. (2.) Seculum, a century or space of 100 years; though among the antients they had a natural seculum, which they reputed to be the longest space of a man's life. (3.) Ævum, an age, a space of time indefinitely used for the life or age of a man; sometimes for 100 years, and sometimes for eternity. (4.) The Olympiad, which was a space of 4 years, or 50 months of 30 days each. At the expiration of each olympiad the Olympic games were celebrated near the city Olympia, in honour of Jupiter Olympius. The antient Greeks made all their computations by the years of the olympiads.

A cycle is (in plain English) a circle of years, months, days, &c. Or, it is a perpetual round or circulation of any the same parts of time; so that the last continually returns upon and succeeds the first. Of cycles, the following are of famous and frequent use.

The cycle of the sun, or solar cycle, is a circle or revolution of 28 years. This cycle received both its name and origin from the seven letters of the alphabet, A, B, C, D, E, F, G, which were placed in the almanack to denote the days of the week in order, from the first to the seventh throughout the year. Now, because one of those seven letters must necessarily stand against Sunday, or the Lord's-day, it was wrote in the capital form, and was called the dominical letter, the other six being put into small characters.

Now, since a Julian year contains 365 days, if that number be divided by seven, there will remain one day: if there had been no remainder, it is plain every year would constantly begin on the same day of the week; but since one day remains, it is as evident the year must begin and end on the same day of the week, and therefore the next year will begin on the day following. For instance, the year 1775 began on a Sunday, and therefore will end on a Sunday; and the next year, 1776, will begin on a Monday.

If the first day of January be on a Sunday, A will be the dominical or Sunday letter for that year; then because the next year begins on Monday, the Sunday will fall on the seventh day, to which is annexed the seventh

seventh letter G, which therefore will be the dominical letter for all that year: also the next year after will begin on Tuesday, and the Sunday will fall on the sixth day, therefore the sixth letter, F, will be the Sunday letter for that year. Whence it is plain the Sunday letters will go in a retrograde order thus, G, F, E, D, C, B, A. G, F, &c. And in the course of seven years, (were they all common ones) the same days of the week and dominical letters would return to the same days of the month.

But because in a bissextile year there are 366 days, there will be two days over and above the 52 weeks; if that year should begin on a Sunday, it will end on a Monday, and the next year would begin on a Tuesday, the first Sunday of which would fall on the sixth of January, to which is annexed the letter F, and not G, as in common years. By this means the bissextile year returning every fourth year, the order of dominical letters succeeding each other is interrupted, and the series does not return to its first state, till after 4 times 7, or 28 years; which period of time therefore is the cycle of which we are discoursing, and when completed, the days of the month return in the same order to the same days of the week.

The cycle of 7 enlarged to that of 28 years by means of the bissextile year.

In every bissextile year there are two dominical letters; the first of which takes place to the 24th or 25th of February; and the other the rest of the year. For in the bissextile year those two days are reputed as one, and both of them have the same letter F annexed to them, and by this means the order of the Sunday letter is interrupted, and a different one henceforth takes place. For example, the year 1736 was a bissextile one, and in the beginning the Sunday letter was D; and the 22^d being Sunday, it was the last time this letter officiated, for the next Sabbath was indicated by the letter C, as thus appears by the days and letters of the last week.

Every bissextile year has two dominical letters.

D. e. f. f. g. a. b. C.
22, 23, 24, 25, 26, 27, 28, 29.

This cycle is not exactly true and just to the motion of the sun, as I have before observed; since the solar cycle is deficient.

the

the Julian year does not contain quite 365 D. 6 H. for the sun finishes his course in 365 D. 5 H. 49', and therefore begins again his course or round 11 minutes before the civil year is ended. And thus every year will begin 11 minutes sooner than by our account. Hence, if at the council of Nice, A. D. 325, the equinox fell on the 21st of March, it would, after 131 years, fall on the 20th; after 262 years, on the 19th; and thus, after 1310 years, or A. D. 1635, it must fall on the 10th of March; which pope Gregory XIII. observing A. D. 1582, made the correction which I have before related; and this reformation of the calendar ought to be received wherever truth and learning find regard.

A just cycle of 7200 years.

But even the Gregorian emendation is not the strict truth; for the 11 minutes in 400 years make 3 D. 1 H. 20'. But the pope neglected the 1 H. 20', which in 18 times 400, or 7200 years, makes a whole day; and therefore no less a cycle than of 7200 years will restore the first agreement between the calendar and the solar motions.

To find the year of the solar cycle.

The ninth year of the solar cycle was past when the first year of the Christian computation commenced; therefore, in order to find the year of the cycle for any year of Christ, proceed thus. Add 9 to the given year, and divide the sum by 28; the quotient shews the number of cycles that have revolved since the first year of Christ, and the remainder is the year of the cycle; but if there be no remainder, the present year is the 28th or last year of the cycle.

A table shewing the same.

But this may be seen by inspection from henceforth to the year 1800, in the following table.

How the
epacts were
reckoned with
the primes.

Now, as this difference wants but 3 hours of 11 days, the antients took no notice thereof, but made the epact of the first year of the cycle 11 days; whence the epact of the second year would be 22 days, the epact of the third year 33; but for each 30 days they intercalated a month, and reckoned the odd 3 days the epact for that year; and thus they proceeded by adding 11 days, and intercalating a month for every 30, till at the end of 19 years, nothing remaining of the former epact, (which for the last, or 19th year, is always 12) there began a new or second revolution of the epacts and golden numbers. Here follows a table of the golden numbers and epacts.

A table shewing the golden numbers and epacts for every year of the cycle, till the year 1800.

Gol. N ^o	Epacts.	Anno Domini					Gol. N ^o	Epacts.	Anno Domini				
		1729	1748	1767	1786				1738	1757	1776	1795	
1	11						10	20	1738	1757	1776	1795	
2	22	30	49	68	87		11	1	39	58	77	96	
3	3	31	50	69	88		12	12	40	59	78	97	
4	14	32	51	70	89		13	23	41	60	79	98	
5	25	33	52	71	90		14	4	42	61	80	99	
6	6	34	53	72	91		15	15	43	62	81	1800	
7	17	35	54	73	92		16	26	44	63	82		
8	28	36	55	74	93		17	7	45	64	83		
9	9	37	56	75	94		18	18	46	65	84		
							19	00	47	66	85		

The defect of
the cycle.

From this table it is evident, that in the course of a cycle there are 7 intercalary months, viz. one in the 3^d, 6th, 9th, 11th, 14th, 17th, and 19th year of the cycle. But notwithstanding all their care of epacts and embolismic months, this cycle is still defective. For the epact of 11 days exceeds the true epact of 10 D. 21 H. 11', by 2 H. 49', which in 19 years make 2 days 5 hours. To equibalance this excess, the 7 embolismic months were made to consist of 30 days each, which is more than the synodical month by 11 H. 15' 57". This excess, multiplied by 7, makes 3 days, 6 hours, 31 minutes. But this again over-balances the former excess by 25 H. 31'; therefore, by allowing 12 days instead of 11 for the epact of the last year of the cycle

to answer this $25\frac{1}{2}$ odd hours, it is plain the solar year will, at the end of the cycle, be greater than the lunar year, by about 1 H. and $31\frac{1}{4}$.

But though this deficiency of the cycle be small, yet in time it becomes very sensible; for by this analogy, $1\frac{1}{2}$ H: 19 Y :: 28 H: 304 years; it is plain, in the space of 304 years, it amounts to one day. Now the council of Nice, A. D. 325, fitting this cycle of the moon to the calendar, it did nearly enough, for some time, give the new moons. But the lunations in every 304 years anticipating a whole day, and since the said council have passed $4\frac{1}{2}$ times 304 years, the new moons happen sooner by $4\frac{1}{2}$ days at this time by the golden number, than they really do in the heavens. Yet notwithstanding this, the Church of England (averse to alterations) retains this old erroneous way of computing the lunations; and her doctors, when they speak of those false and erroneous new and full moons, to take off the odium, refine the expression into ecclesiastical ones.

In the first year of Christ, the golden number was 2; therefore to the current year of Christ add 1, and divide the sum by 19; the remainder (neglecting the quotient) will be the golden number for that year.

Since the council of Nice hath fixed the vernal equinox to the 21st of March, and appointed the first full moon which happens after it, to be the boundary of Easter, which is therefore called the Paschal term; and the earliest Paschal term being the 21st of March, and the next Sunday after being Easter-day, it is plain the earliest Easter possible is the 22^d of March: and the 18th of April being the latest Paschal term that can happen, the seventh day after, viz. the 25th of April, is the latest Easter possible, and such it was in the year 1736. Now within the limits of the 22^d of March and 25th of April, are 35 days; the number belonging to each of which is called the number of direction, because by means of it the times of Easter, and other moveable feasts, are ascertained for any year, as below is shewn.

The consequence of it;

To find the golden number for any year of Christ.

The limits of Easter.

Paschal term, what.

Number of direction, what.

Golden Numb.	A	B	C	D	E	F	G
1	19	20	21	22	16	17	18
2	5	6	7	8	9	10	11
3	26	27	28	29	30	24	25
4	19	13	14	15	16	17	18
5	5	6	7	8	2	3	4
6	26	27	21	22	23	24	25
7	12	13	14	15	16	10	11
8	33	34	35	29	30	31	32
9	19	20	21	22	23	24	18
10	5	6	7	8	9	10	4
11	26	27	28	29	30	31	32
12	19	20	21	15	16	17	18
13	5	6	7	8	9	10	4
14	26	27	28	29	23	24	25
15	12	13	14	15	16	17	18
16	5	6	7	1	2	3	4
17	26	20	21	22	23	24	25
18	12	13	14	15	9	10	11
19	33	34	28	29	30	31	32

To find the number of direction.

Example for the year 1736.

How to find Easter.

To find the number of direction for any given year of Christ, find the golden number and dominical letter for the same, which observe in the table adjoined, the first in the first column, the other at the top, and in the place of meeting you have the number of direction.

Thus for the year of our Lord 1736, the golden number is 8, and the dominical letter (after February) is C; then against 8 in the side column, and under C, is 35, the number of direction required.

Then to find Easter, add the number of direction to the 21st of March; if the sum be under 32, it is the day of March; if above 31, subduct 31 from it, the remainder is the day of April on which Easter Sunday will fall that year for which you use the number of direction. Thus in the year 1736, the number of direction 35 added to 21 makes 56, from which subtract 31, there remains 25, the day of April on which Easter Sunday then happened. Again, in the year 1738, the golden number is 10, the dominical letter is

is A ; and so the number of direction 5, which added to 21 makes 26, the day of March on which Easter did then fall.

Having found Easter, the other moveable feasts are found by the verses following : Of the moveable feasts.

The Sunday next the feast of St. Andrew
 The Advent of our blessed Lord doth shew.
 Th' unstated feast Septuagesima
 Nine weeks 'fore Easter stands by Paschal law.
 The Sunday Sexagesima we call
 Does just eight weeks 'fore Easter Sunday fall.
 Next * Quinquagesima by seven weeks
 Precedes, and † Quadragesima by six.
 Five after Easter we Rogation find ;
 And five days thence ‡ Ascension is assign'd.
 The sev'nth from Easter is || Whitsunday feast ;
 On Trinity-day, at eight weeks end, we rest.

* Shrove-Sunday.
 † First Lent Sunday.
 ‡ Holy Thursday.
 || Descent of the Holy Ghost.

By means of the epacts, the age of the moon is thus found. Add the epact of the given year, the day of the month, and the number of months from March to the given month inclusively ; and the sum, if under 30, is the moon's age ; if above, deduct 30 or 60, the remainder is the age sought. Note, the epact of the old year must be used till the first of March. Example ; I would know the moon's age, May the 12th, 1736 ; the epact is 28, then the sum of 28 and 3 and 12 is 43 ; subduct 30, the remainder shews the moon to be then 13 days old ; wherefore on the 14th of May will be the full moon ; and 15th before, viz. 29th of April, the moon changed. To find the age and phases of the moon.

To find the time of the moon's southing, multiply her age by 4, and divide that product by 5, the quotient is the hour ; and multiply the remainder by 12 for minutes. Thus in the foregoing example, her age is 13, which multiplied by 4 is 52 ; this divided by 5 quotes 10, the hour at night of her southing ; and the remainder 2 by 12 gives 24 minutes after 10, according to the mean motion. To find the moon's southing.

From the cycles of the sun and moon multiplied into one another, arises another cycle or period of 532 years, (for 28 by 19 gives 532) which was invented Of the Victorian period.

The Dionysian period.

Great Paschal.

To find the year of the Dionysian period.

Of the Calippic period.

Its defect.

Of Hipparchus's period.

by Victorius, a presbyter of Limoges in Aquitaine, by order of Hilary bishop of Rome, and it is therefore called the Victorian period; after the expiration of which he supposed all the new and full moons, the same times of Easter, and the same dominical letters, would all come over again in the same order of time as in the former cycle, and so on in all following cycles for ever. This was finished and first published in the year of our Lord 457. Afterwards, in the year 527, Dionysius Exiguus, a Roman abbot, corrected it in some particulars, and it was called the Dionysian Period from him; as also the Great Paschal, because the Western churches went by it for many ages, till pope Gregory XIII. new-modelled it, as before related.

To find the year of the Dionysian Period for any given year of Christ, to the current year add 457, and divide the sum by 532, what remains is the year of the period sought. Example; to the year 1736 add 457, the sum is 2193, which divided by 532, the quotient is 4, and the remainder is 65, the year current of the Dionysian Period.

There is another period of 76 years, invented by Calippus Cyzicenus of Mysia, and therefore called the Calippic Period. He supposed the excess of the solar year above the lunar at the end of the Metonic cycle of 19 years, would, in the course of 4 of those cycles, or 76 years, amount to a whole day, and so cast away a day in every such period of 76 years. But herein he was greatly deceived; for the excess of the solar above the lunar year in one cycle is but $1\frac{1}{2}$ hour, and therefore in 4 cycles, or 76 years, could amount to but 6 hours instead of 24. Wherefore the error of this period is a deficiency of 18 hours nearly.

This gave occasion afterwards to Hipparchus of Nicæa in Bithynia to make a new correction of the Metonic cycle; for he observing that the Calippic period was laid too great by a quarter of a day in the solar motions, he multiplied by 4, which produced a new period of 304 years; and therefore in every 304 years he deducted a whole day, that the moon might come again to the old place in the calendar. And this was very near the truth, and much the same with the Gregorian correction, or new style, made many ages after.

The

The Romans made use of a cycle, called the Cycle of Indiction, which had no relation to the celestial motions, but was used for civil purposes, the chief of which was to indicate or make known the time of certain payments made by the Roman subjects to the republic. It consisted of 3 lustrums, or 15 years; and was established by Constantine, A.D. 312, in the room of the Greek olympiads. To find the year of this cycle, subtract 312 from the given year of Christ, and divide the remainder by 15; and neglecting the quotient, what remains is the year of the indication sought.

Of the Cycle of Indiction.

To find the year thereof.

From the multiplication of the cycles of the sun, moon, and indication, arises the famous period, called the Julian Period from Julius Scaliger, the reputed author thereof. This period consists of 7980 years, (for 28 by 19 gives 532; and that by 15 gives 7980.) This period had its beginning fixed to the 764th year before the creation, and is not yet compleated; and therefore comprehends all other cycles, periods, and epochas, and the times of all memorable actions and histories. There is but one year in the whole period that has the same numbers for the three cycles of which it is made up: and therefore if historians had remarked in their annals the years of the respective cycles, there had been no dispute about the time of any action.

Of the Julian Period.

The first year of Christ was the 4714th year of the Julian period; and therefore, if to the current year of Christ we add 4713, the sum will be the year of the Julian period. So the year 1736 will be found to be the 6449th year of the said period.

To find the year thereof.

There is another called the Constantinopolitan Period, which is of the same length or number of years as the Julian period, viz. 7980; but it neither begins at the same time, nor have the cycles of the sun and moon the same situation in both; for the first year of the solar cycle in the Julian, is the 12th in this; and the first of the lunar is the 17th here; the cycle of indiction is the same for the most part in both. This period is used by the Greeks, as the Julian is by the Latins, or Roman historians.

Of the Constantinopolitan Period.

Epocha or Æra is a certain term or fixed point of time, made famous by some memorable accident; from

Of Epocha's Æra's.

which, as from a root, we make our calculations and computations of time; and all remarkable actions are disposed and recorded according to the series of years which follow from such a root or epocha. The principal æra's are those of the Creation, of the Olympiads among the Greeks, of the building of Rome; that of Nabonassar, the death of Alexander, the Abyssine Æra of Martyrs, the Arabian Hegira, the Persian Jeseigird, the most famous æra of the Birth of CHRIST; and that which contains them all, the Julian Period, above explained. All these epocha's and æra's, together with several others of less note, have, in the following table, their beginnings reduced or fixed to the years of the Julian period, the creation of the world, and to the years before and after CHRIST.

	Jul. Per.	A.M.	anteC.
1 The creation of the world, after the Jews —	952	1	3760
2 The common epocha of the creation —	765	1	3950
3 The same by the Greek emperors —	787	1	3926
4 The same in Mr. Bedford's Scripture Chronology —	706	1	4007
5 The deluge, or Noah's flood —	2362	1657	2351
6 The Assyrian monarchy by Nimrod —	2665	1960	2048
7 The birth of Abraham —	2714	2009	1999
8 The Israelites 400 years servitude in Egypt —	2819	2114	1894
9 The kingdom of Argos founded by Inachus —	2857	2152	1856
10 The kingdom of Athens founded by Cecrops —	3157	2452	1556
11 The Israelites departure out of Egypt —	3219	2514	1494
12 Their entrance into Canaan, or the Jubilee —	3258	2553	1533
13 The destruction of Troy —	3530	2825	1183
14 The first Sabbatical year —	3260	2557	1451
15 The Jewish high priesthood —	3300	2603	1405
16 King David's reign —	3646	2941	1067
17 The foundation of Solomon's temple —	3698	2993	1015
18 The epocha of Nabonassar —	3966	3261	747
19 The Olympiads —	3938	3233	776
20 The building of Rome —	3962	3257	751
21 The destruction of the kingdom of Israel —	3992	3287	721
22 The Babylonish captivity —	4108	3302	606
23 The destruction of Solomon's temple —	4126	3421	587
24 Cyrus the founder of the Persian monarchy —	4178	3472	536
25 The battle at Marathon —	4223	3517	491
26 Xerxes's defeat at the battle of Salamis —	4234	3528	480
27 Meto began his cycle —	4282	3576	432
28 The beginning of the Peloponesian war —	4283	3577	431
29 Daniel's seventy weeks of years began —	4269	3564	444

	<i>Jul. Per.</i>	<i>A.M.</i>	<i>anteC.</i>
30 The beginning of the Calippic period ———	4383	3677	331
31 The death of Alexander ———	4390	3684	324
32 The Grecian epocha of the Seleucidæ ———	4402	3695	312
33 The æra of the Asmoneans or Maccabees ———	4548	3841	166
34 The Antiochean epocha ———	4665	3958	49
35 The correction of the calendar by Julius Cæsar	4669	3962	45
36 The beginning of the reign of Herod ———	4677	3970	37
37 The Spanish æra ———	4676	3969	38
38 The battle of Actium ———	4683	3976	31
39 The epocha of the title of Augustus ———	4687	3980	27
40 The true Birth of CHRIST ———	4710	4005	4
41 The vulgar or Dionysian year of CHRIST's Birth	4714	4009	<i>A. C.</i>
42 The Passion or Death of CHRIST ———	4746	4041	33
43 The destruction of the city of Jerusalem ———	4783	4071	70
44 The Dioclesian or æra of Martyrs ———	4997	4292	284
45 The epocha of Constantine the Great ———	5019	4314	306
46 The council of Nice ———	5038	4333	325
47 The encœnia of Constantinople ———	5043	4338	330
48 The epocha of the Hegira ———	5335	4610	622
49 The epocha of Yefsejerd ———	5345	4620	632
50 The Jellalæan or Gelalæan epocha ———	5792	5067	1079
51 The epocha of the REFORMATION ———	6230	5505	1517



Of HISTORY; and the Original of NATIONS and KINGDOMS.

Historiography, history, and historiology, defined.

HISTORIOGRAPHY is the art or method of writing history. History is a narration or relation of things, actions, and events, just as they happened or were transacted, in an orderly manner. And historiology is the doctrine or knowledge of history in general, as a science taught and learnt.

The world and mankind had their original from God, according to Moses's history.

The world (the grand theatre of action) had its original as related by Moses; who also at the same time gives us the history of the origin of man, and all other things, which he positively assures us were the effects of God's wonderful and omniscient power. The sacred writings therefore are the first and most authentic history in being.

Arguments proving the truth of the Mosaic history.

But abstracting from their unquestionable authority, we may prove the truth of their history of the original of mankind, &c. by the following indubitable arguments. (1.) The tradition of all ages and nations ascribes the original of mankind to creation, or to parents who were not begotten in the common way, but created. (2.) Observation proves the increase of people daily exceeds their decrease; and that nations double their people in about 360 years, or sooner. (3.) The gradual, slow, and late inventions of arts and sciences, confirm it; they all having had their rise within the compass of 5 or 6000 years. (4.) The obscure original of nations, and the late institutions of laws or governments, of war, &c. plainly prove the same. (5.) The plantations of most parts of the world, and the discovery of the greatest part of the earth, is of late date.

The chief heads of the Mosaic history.

The Mosaic history then being of undoubted truth, we may safely depend on its account of the state and events of the first or antediluvian ages of the world, for that only is the source of all our knowledge of

of that kind. The history of the antediluvian world may be comprised under the following heads. (1.)

The formation of the earth out of a chaos, the creation of light, and, in short, the whole structure and beautiful order of the solar system. (2.) The formation of man, and woman, and all other creatures, by the immediate power of God. (3.) The original state of the first man and woman, Adam and Eve, viz. corporeal nakedness; perfect rectitude of mind; the rule of their conduct; the place of their dwelling; their employment, &c. (4.) Their defection from this original state of perfect bliss, by transgressing the divine command, the rule of their conduct. (5.) Their degradation, and subjection to a servile and miserable state of life thereupon. (6.) The birth of Cain and Abel; and the murder of Abel by Cain; and the consequences thereof. (7.) The birth of Seth, and the genealogy of the patriarchs from Adam to Noah; with the inventors of mechanic arts and trades. (8.) The universal corruption of mankind at the time of Noah, the threatening of the flood, their impenitence and incorrigibleness, the building of the ark by Noah; and (9.) The total destruction of the world by the threatened deluge or flood of waters, with the miraculous manner thereof. (10.) Lastly, The preservation of Noah and his family, with some of every sort of terrestrial animals and fowls in the ark, for the replenishing the world anew. These great events are all distinctly related by the divine historian, in a style perfectly sublime, and full of energy.

The creation of the world.
Of men and all creatures.
Man's original state.

The fall.

The effects thereof.
Birth of Abel and Cain, &c.
The genealogy of the patriarchs.
The corruption of the old world.
The deluge.

The preservation of Noah, &c.

The earth being again rendered habitable, Noah turns out all kinds of creatures into the silent, wild, and desolate earth, there to propagate their species, and store it as before; while himself and family (the only remains of the great shipwreck of human kind) betook themselves to the cultivation of the earth afresh, and re-peopled it with inhabitants, in the following manner.

The earth re-peopled and replenished.

The three sons of Noah were Shem, Ham, and Japhet; and it is said, that by the descendants of Japhet were the Isles of the Gentiles divided, or inhabited. By the Isles of the Gentiles, the learned say,

The sons of Noah.

The sons of
Japhet.
Gomer,
where seated.

Of Gomer's
sons.
Ashkenaz
settled in Bi-
thynia.

Riphat situa-
ted in Paphla-
gonia, on the
Euxine coast.

The situation
of Togarmah.

The colonies
of Gomer
plant Ger-
many,

say, is to be understood the countries of Lesser Asia, and of Europe. Of the sons of Japhet, the family only of Gomer and Javan are mentioned. From Gomer, the antient Galatians were called Gomerites; and another people of this part of Asia called Cimmerii: moreover, the etymology of Gomer and Phrygia are alike, and Phrygia did antiently extend over a great part of North Asia; wherefore Gomer settled there. The first of Gomer's sons is Ashkenaz, and in Bithynia there was the Ascanian Bay, Lake, and River, and in Troas a city and province both called Ascania, and on the coast the Ascanian isles. Also Ascanius was the name of kings and great men in those parts; from all which (and more that might be said) it is evident Ashkenaz first settled in Bithynia and the north-western part of Asia.

Riphat, the second son of Gomer, probably seated his family in the parts adjoining eastward to the plantations of Ashkenaz on the Euxine coast; for antiently the inhabitants of Paphlagonia were called Riphateans from Riphath. There was also a river called Rhebæus. Also Pliny here places a people called Riphæi, and another called Arimphæi; all which are evidently derived from Riphath.

The third and last son of Gomer is Togarmah, whose family was seated in the remaining most easterly part of the nation of Gomer, on the Euxine. This seems evident from Ezek. xxxviii. 6. and xxvii. 14. and the Trocini of Strabo, who dwelt in the confines of Pontus and Cappadocia; and by Cicero called the Trogmi, and Trocmeni by Stephanus; and still plainer by the Council of Chalcedon, Trocmades, or Trogmades.

These families of Gomer soon grew very numerous, and sent divers colonies into several parts of Europe. They first settled at the lake Mæotis, and so gave the name of Bosphorus Cimmerius to the streight between it and the Euxine sea. These, in time, spreading by new colonies along the Danube, settled in the country called from thence Germany, whose antient inhabitants were the Cimbri, so called of the Cimmerians. The Germans call themselves Germani, which

which is nearly the same as Gemren, or Gomren; and the Jews to this day call them nothing but Ashkenazim, or Ashkenazites.

From Germany they afterwards spread themselves into Gaul or France, where they were originally called Gomerites, then by the Greeks Galatæ, and at last Gauls. Also Appian assures us that the Gauls or Celtæ were otherwise called Cimbri.

From the colonies of France or Germany came the first inhabitants of this our isle of Great-Britain; for the Welsh, or antient Britains, call themselves to this day Kumero, or Cymro, and Kumeri, and their language Kumeraeg; all which plainly shew them derived from the Cimbri; to whom also the Saxons and Angles were near neighbours, and so of the same stock; and consequently we their descendants may easily derive ourselves from Gomer.

The sons of Javan were Elisha, Tarshish, Kittim, and Dodanim: these settled in the southern part of the Lesser Asia; and from Javan the country Ionia took its name; for the Hebrew Javan is in Greek Ion or Iaon; and as the antient Greeks were called Iones or Iaones, that is, Ionians, so the country of Greece was called Javan, as in Dan. ix. 2. In those parts we find several footsteps of Javan's sons in history. Thus the chief town of Cilicia was called Tarsus, and the country itself Tarshish from his son of that name; see Jon. i. 3. From Kittim there was a country called Cetis, and a people called Cetii: and from his son Elisha descended the Æolians; as, lastly, from Dodanim the Dorians, and the name of the country Doris. From hence it is manifest that Javan and his sons were the original founders of the Grecian nation and people.

As to the colonies of Javan's sons, we may observe this in short, that the most considerable islands between Europe and Asia fell to the lot of Elisha's family; for they are called the Isles of Elisha, Ezek. xxvii. 7. and the sea itself might be called Hellespont, as if it were Elishpont, or Sea of Elisha. The descendants of Elisha passing over into Europe, were called Hellenes, and their country Hellas, and afterwards Greece. The Dodanim are said to send colonies to whence.

and France.

and from thence our isle of Great Britain.

Of the sons of Javan and their settlements. Ionia and the Ionians from Javan.

Tarsus in Cilicia from Tarshish.

The Æolians from Elisha, and Dorians from Dodanim

The colonies of Javan's sons

Hellespont, whence is called.

Hellas and Hellenes, to whence.

The sea of
Tarshish, what
Of Japhet's
other sons.

Meshech and
his descend-
ants, where
settled,
in Moscovy.

Tubal the
father of the
Iberians and
Russians.

Magog plant-
ed Scythia and
Georgia.

Madai the
father of the
Medes, or
rather of the
Macedonians,

and of the
Mœsians in
Europe,
and Sarmatians.

Tiras the fa-
ther of the
Thracians,

to the isle of Rhodes, Sparta, &c. and that the Kittim peopled Macedonia, Cyprus, Italy, &c. That the colonies of Tarshish came from Cilicia along the Mediterranean to Spain, and there fixed; and using the sea much, occasioned it to be called the Sea of Tarshish.

As to Japhet's other sons, Magog, Madai, Tubal, Meshech, and Tiras, we have this account of their plantations and settlements.

Meshech is said to have joined his brother Gomer on the East, and settled his family in Cappadocia and Armenia, and in time sent colonies into the northern parts of Asia, and were there called the Moschi; and from thence the city Moscow, and the country Moscovy. Thus the Moscovites are the descendants of Meshech.

Tubal planted north of Meshech, between the Euxine and Caspian seas, and is affirmed to be the father of the Asiatic Iberians, called originally Theobeli from Tubal. 'Tis further supposed that the Russians were at first a colony of Tubal's family.

Magog is, by the consent of all the learned, placed north of Tubal, and esteemed the father of the Scythians that dwelt on the east and north-east of the Euxine sea. Also it is supposed that by Gog (Ezek. xxxviii. 2.) is meant the people, and by Magog the land of Scythia; and that from Gog came the name Gogarene, and thence Georgia, a part of this tract so called at this day.

Madai is universally allowed to have been the father of the ancient Medes, and their country from him called Media; but of late Mr. Mede has placed him in Macedonia, which was antiently called Æmathia, as if it were Ai-mathia or Ai-madia, i. e. Land of Madai. Also he imagines the name Macedonia to be compounded of Madai and Cetim, whose sons in time mingled together in those parts. The Mœsians in Europe are thought to be a colony of this family, as coming near to Methians; and that the Sarmatians might be so called, as is Sar-Madai, i. e. a remnant of Madai, or Madai's posterity.

Tiras, the last son of Japhet, was undoubtedly the father of the Thracians, and from his name Tiras or Thiras the country was called Thracia or Thrace.

But

But Mr. Wells, says he first settled in Lesser Asia, in the country from him called Tros, or Troas, or Troy; and the Trojans, were his descendants: whence colonies afterwards going into Europe were called Thracians, &c. as before; which is not only a very learned, but very reasonable conjecture.

Having planted out Japhet and his family, let us next see what became of Shem and his. The sons of Shem were Elam, Ashur, Arphaxad, Lud, and Aram.

I begin with Aram, as next adjoining to the nations of his uncle Japhet. He possessed the country of Asia, called from him Armenia; also Mesopotamia, which in Hebrew is called Aram-Naharaim, or Aram between the two rivers, viz. of Euphrates and Tigris. And in the Scripture the word Aram is constantly rendered Syria. From his son Uz, a tract about Damascus, the Stony and Desert Arabia, &c. was called the Land of Uz; and the rest of his family planted all Armenia Major.

Ashur planted the country called from him Assyria, and in the Eastern tongues Ashur, without variation. It originally contained that country only, lying east of the Tigris, which the Greeks called Adiabene.

Elam seated himself next to Ashur eastward, and peopled the country afterwards called Persia. For not only in the Prophecies, Elam and Elamites ever denoted Persia and the Persians, but in other authors we find here a country and city called Elymais, and a people called Elymæi, inhabiting on the Persian Gulph.

Arphaxad is assigned his lot, by learned men, in the most southern parts of Mesopotamia, where the plain or vale of Shinar lay on the river Tigris, together with the country of Eden, and the tract called Arrapathitis, a name plainly derived from his name, in Hebrew Arpachshad; a good part of all which was afterwards called Chaldea; and Flavius Josephus says the Chaldeans were originally called Arphaxadeans.

As to Lud there is nothing certain; and having settled the rest of the sons of Shem, we proceed next to the plantations of the sons of Ham. The sons of Ham were Cush, Mizraim, Phut, and Canaan.

That

but first of the Trojans.

The sons of Shem.

Aram planted Armenia, Mesopotamia, &c.

Ashur the founder of the nation of Assyria.

Elam the father of the Persians.

Arphaxad, where he planted.

'Tis uncertain where Lud planted.

Of Ham and his sons.

That Ham and his son Mizraim went and first settled in Egypt is manifest, since Egypt is twice or thrice, in the Psalms, called the land of Ham; and there was the temple of Jupiter Hammon or Ammon, who was originally no other than Ham; and Egypt is evermore in the Scriptures called Mizrajim.

The descendants of Mizraim.

The Budim.
The Lehabim
The Naphtahim.
The Pathrusim
The Capthorim.

The descendants of Mizraim were the Budim, who inhabited Ethiopia. The Lehabim, who possessed ancient Lybia in Africa. The Naphtahim, who dwelt in that part of Lybia now called the Desert of Barca. The Pathrusim, who dwelt in Upper Egypt, or Thebas. The Capthorim also had their situation in a part of the same country, as is plain from the name Coptus, an old city of Egypt; and the Christians there are still called Cophtes. And it is not unlikely that the name Egypt might come from the same source, it being called Ægyptus for Ægophtus or Ai-Cophtus, the Land of Coptus, or the Capthorim. From the Cassuhim sprang the Philistines. What is said of the Ananim is all uncertain.

Cush settled in Arabia.

Cush possessed Arabia; and his sons Sebah, Havilah, &c. seated themselves in the several parts thereof; from whom we read of the Sabeans, the Land of Havilah, &c.

Canaan the father of the Canaanites.

Canaan settled in the country lying on the east and south-east of the Mediterranean sea, and from him called the Land of Canaan, which was very populous with his posterity, the Zidonians, Jebusites, Emorites, Girgashites, &c. of which see Gen. x. 15-18. This was the land afterwards promised to Abraham, which he and his posterity accordingly enjoyed, and was then the land of Israel, and Judah.

Phut, where settled;

in Barbary.

Phut is supposed to have taken up his residence in the western part of Africa on the Mediterranean, in the country of Mauritania, (now Morocco and Algiers) for there are the footsteps of his name in Putea a city, and Phut a river; whence the country was called the Region of Phut, in St. Jerome's time.

Gen. x. 32.

These are the plantations of the families of the sons of Noah after their generations in their nations; and after this manner by these were the nations divided in the earth after the flood.

But

But though the Scripture gives us an ample account of the original of the different nations and people of Europe, Asia, and Africa, yet it speaks not one word of America, and the origin of the nations therein. And not only Moses, but all other historians, are silent with regard to it; the discovery thereof being never sufficiently made till these last ages.

The first who effectually discovered it was one Christopher Columbus, or Colon, a Genoese, in a voyage he undertook for that purpose by order of the king of Spain, A. D. 1492, and on August 2. On the 12th of October following, he landed on the isle which he called St. Salvador; and after this went on, and made very great discoveries on the continent, as well as of many islands; and returned to Spain after seven months and eleven days. In 1502, May 9, he made a second voyage to America, and enlarged his former discoveries very much. At length he returned; and meeting with ungrateful usage, it hastened his death, which happened May 20, 1506.

Americus Vespucius, a native of Florence, made the next considerable discoveries in two voyages; the first of which he undertook May 20, 1497, and the other May 11, 1500. From him the whole continent was called America; though North America is said to have been discovered by one Sebastian Cabot, or Gabot; but who he was, or of what country, is not agreed. Besides the discoveries of several of the inland countries, &c. by various other persons.

Upon the discovery of this part of the world, it was found that every part of the same was inhabited by the human species, as well as great variety of beasts, &c. But how they should come here is a question difficult to solve, since it has no known communication with either Europe or Asia. But yet many modern authors and travellers are of opinion that it is either joined on the north parts by land, or separated by very narrow freights from Asia; and that therefore it was easy, and is very probable that this part of the world might be peopled by colonies from that, some three or four hundred years after the flood. It is certain the Phœnicians had an early acquaintance

The Scripture says nothing of America.

America was first discovered by Christopher Columbus. At what time.

Further discovered by Americus Vespucius, who gave it the name of America.

How and whence America was probably peopled

with the Cassiterides, the islands now called the Azores, and from thence they might sail to America, as it is reasonably supposed large colonies of Scythians and Tartars did over the eastern sea, and so peopled America on the west. But I leave these conjectures, and pass to view the state of the more known times of the world.

The beginning
of the Assyrian
monarchy by
Nimrod.

The earth being divided among the sons and descendants of Noah, they soon began to form themselves into societies, to establish laws and governments, to make conquests, and to aim at rule, power, and empire. The first who began to signalize himself this way was Nimrod, the son of Cush, and grandson of Ham; of whom Moses distinctly saith, He began to be a mighty one upon the earth. He first altered paternal government, and usurped dominion over others, and first invaded the lot of Arphaxad, and made himself master of the lower part of the land of Shinar; he there built the city and tower of Babel, or Babylon, and made it the seat of his kingdom; to which he added Erech, Accad, and Calneh, in the same land. He is said to have reigned 63 or 65 years. He was succeeded by his son Ninus, who built Nineveh; and joining with the king of Assyria, they conquered Armenia, Media, and (in 17 years) all Asia, besides the Indians and Bactrians under the command of their famous king Oxyartis. He died after 52 years reign, and was succeeded by his wife Semiramis, who wore a man's habit. She conquered Ethiopia, made war on the Indians, and was the most victorious of her times. Her son Ninias slew her after 42 years, and succeeded. He is said to be the first who drew up soldiers in order of battle, and to have 30 successors in the empire; of whom we know nothing, but that one Tutamus assisted Priamus king of Troy when besieged by the Greeks; and Sardanapalus, the last of them, who was the most voluptuous and effeminate man in the world; and being besieged in Nineveh, at the end of two years he erected a funeral pile, and burnt himself therein.

From the dissolution of the
Assyrian em-

This ancient Assyrian, and first of monarchies, having governed Asia above 1300 years, being dissolved on the death of Sardanapalus, there arose up

two other empires in its stead, the one founded by Arbaces (the scripture Tiglath-Pileser) governor of Media, and the other by Belesis, (the same as Nabonassar) governor of Babylon; these being the two principal commanders that headed the conspiracy, whereby the former empire was brought to an end. These having, on their success, divided the empire between them, Belesis (who in Scripture is called Baladan) had Babylon, Chaldea, and Arabia; and Arbaces had Media, Persia, and the neighbouring provinces. And these were the beginnings of the Babylonian or Chaldean empire, and that of the Medes and Persians. This happened in the 7th year of the building of Rome, and in the 747th year before CHRIST, and in the 12th year of Jotham king of Judah.

The empire of Babylon and Chaldea subsisted from its first founder Belesis, to the death of its last monarch Darius the Mede, and uncle of Cyrus, the space of 210 years. Also the empire of the Assyrians and Persians continued entire from Arbaces to Sennacherib; in the 5th year of whose reign (and the 37th of the empire) the Medes revolted, and made Deioeces king the next year; and 30 years after, the empire of Assyria was united with that of Babylon under Esarhaddon, and in the 19th year of Manasseh, king of Judah; and thus continued till the predicted Cyrus, general of the Medes and Persians, arose and subdued them both, then governed by Belshazzar (or Nabonadius) and placed his uncle Darius (or Cyaxares) on the throne of Babylon, who, after two years, died; when Cyrus himself assumed the imperial power, and established and founded the second universal monarchy, called the Persian empire or monarchy, which extended over all Asia, and part of Africa in time, from India to Ethiopia inclusively.

Their continuance and dissolution.

From whence arose the second universal Persian empire under Cyrus.

In the 141st year of the Babylonian empire, king Nebuchadnezzar, in the 20th year of his reign, took Jerusalem, and carried the Jews away into the captivity, where they continued 70 years, till Cyrus again restored them to their own land, which was in the 536th year before Christ: and in the 26th year of the Assyrian empire, and the 721st before Christ,

The kingdoms of Israel and Judah abolished.

Salmaneser took Samaria, led away the ten tribes of Israel into captivity in Assyria, and thereby extinguished the kingdom of Israel; which was 115 years before the captivity of Judah.

Of various nations contemporary with the Assyrian monarchy.

During the period from the first great monarchy founded by Nimrod, to the second or Persian monarchy, founded by Cyrus, several petty kingdoms in other parts of the world, especially in Africa, had their rise, various vicissitudes and declensions, at different times; some of the principal of which I shall name in the order as follows, beginning with Greece and its several republics.

Greece contained, in its ancient extent, Hellas, Thessaly, Epirus, Macedonia, Thracia in part, Peloponnesus, and many provinces in Asia.

the four-fold state of Athens. Monarchy.

In Hellas was founded the most ancient kingdom of Athens, which authors observe to have undergone four different states before the Romans subdued it, viz. (1.) Monarchy; in which it was governed by seventeen kings, from the year of the world, or A. M. 2448 to 2914, the space of 446 years; the first of whom was Cecrops, an Egyptian, who founded it, and the last Codrus; after whom the Athenians abolished the kingly power, declared Jupiter their only king, and instituted the (2.) Perpetual Archontes; the first of whom was Medon, and the last Alcmeon. There were thirteen, and they governed about 316 years: they instituted the Olympiads, and built the temple of Jupiter Olympius, one of the wonders of the world. (3.) The Decennial Archontes, who ruled only ten years each. Of these there were seven; the first was Creon or Charops, and the last Eryxias: this government continued seventy years. (4.) Annual Archontes, who were chosen yearly; and this state lasted about 761 years.

Perpetual Archontes.

Decennial Archontes.

Annual Archontes.

The state of Sicyone. Monarchical.

Sicyone underwent two states of government. (1.) Monarchical, founded about A. M. 1900, by Ægiæus, the first king; after him succeeded twenty-five others, the last of which was Zeuzippe. This state endured about 900 years. (2.) Sacerdotal, or that by the priests of Apollo; the first of whom was Archelaus, and the last Charidemes. This government lasted about forty years; afterwards it continued a

Sacerdotal, or hierarchial.

free

free state for thirty-three years, when it was seized by the kings of Mycene.

Corinth underwent six states. (1.) That of the Sifiphides, seven kings; the first of which was Sifiphus, about A. M. 2593, and the last Hiantidas: these ruled 269 years. (2.) The Heraclides, four kings; the first was Aletes, and the last Primius; they governed 134 years. (3.) The Bacchides, eight kings; the first of whom was Baëtris, and the last Automene; this state continued 177 years. (4.) The Prytanes; these were annual magistrates, who ruled about 121 years, when they fell under the dominion of the tyrants Sipfelus and Periander. (5.) Their next stage was that of a republic; during which they were engaged in many wars. (6.) Their sixth and last state was under the Romans, whose consul Lucius Mummius defeated them in battle, and burnt their town.

The sixfold state of Corinth. The Sifiphides The Heraclides. The Bacchides The Prytanes.

Republic.

Roman.

Argos, which looked upon itself to be the most magnificent city in the world, was governed by eighteen kings; the first was Inachus, the founder thereof, and the last Agamemnon. These reigned from A. M. 2148, about the space of 670 years; at the end of which happened the Trojan war.

The state of Argos monarchical.

Lacedæmon underwent four states. (1.) A monarchy, under eleven kings; the first was Lelex, the founder, about A. M. 2593, and the last Tisamene. (2.) The Heraclides, or descendants of Hercules; these were divided into the two branches of Euristenes and Procles; they obtained the kingdom by lot, and it is said they began their reign A. M. 2862, but it is uncertain how long it continued. (3.) Their third state was under four kings, whose power was moderated by twenty-eight Gerontes or senators appointed by the famous lawgiver Lycurgus; the first was named Telecles, who began his reign A. M. 3130, and the last was Theopompus. (4.) Their fourth state was under kings, whose power was checked by five Ephori, or inspectors; the first of these kings was Polydorus, who began his reign A. M. 3260; and the twenty-first, or last of them, was Cleomenes III. He attempted to restore the government founded by Lycurgus, killed the Ephori, took Argos, and part of Peloponnesus; but was at last defeated in battle by Antigonus; after

The fourfold state of Lacedæmon.

which he retired into Egypt, and all the glory of Sparta fell with him.

Of Mycene.

Mycene was governed by three kings, from A. M. 2693 to 2831; the first of which was Perseus, and the last Orestes, whose sons were dethroned by the Heracclides, kings of Lacedæmon, and subdued Mycene.

Thebes.

Thebes, the principal city in Bœotia, was under the government of many kings and great men, whose names are famous in fabulous history. The first is said to be Calydnus, and next to him reigned Ogyges, in whose time all Greece was reported to be deluged. Then Cadmus is said to have come into Bœotia, and to have brought the use of letters with him out of Phœnicia. After this we read of Amphion, Oedipus, &c. and last of all Xanthus; who being killed in battle, the Thebans renounced monarchy, and changed the state to an aristocracy or democracy, as it was when the Persian empire overwhelmed it.

Troy.

Troy was under the government of seven kings, from Teucrus the first, to Priamus the last, for the space of 300 years, when it was destroyed by the Grecians.

The Roman state various.

The history of the Roman affairs is involved in obscurity and uncertainty, till the time when Romulus founded the city, from him called Rome, which is said to be about A. M. 3300. He formed the state into a monarchy, and was succeeded by six kings, the last of which was Tarquin, whom Brutus drove into exile, and thus put an end to the kingly government, after a period of about 240 years. Upon this the Romans established the consular government, which was a mixture of aristocracy and democracy. This state continued till Julius Cæsar again reduced both it and all others to a monarchical or despotic empire, which was in about 460 years.

Egypt's ancient state.

Egypt was famous for its early government and great succession of kings, even from Ham, or at least from Mizraim his son, who is reckoned the first in the chronology of the Egyptian kings, and is said to have begun his reign there A. M. 1900. From him to Nectanebus the second (who was the last of the Egyptian race) they enumerate thirty-seven kings inclusively, and 1700 years, or thereabouts. Nectanebus

was

was expelled by Ochus the eighth Persian emperor, and his kingdom subdued, and made a part of the Persian (which soon after became the Grecian) empire. But we return to take a concise view of

The Persian Empire, which was the second of the four great and universal monarchies of the world. Of the Persian empire, or second monarchy.

Cyrus, as has been observed, was the famous founder thereof in the year before Christ 536. He was surnamed the Great, on account of his heroic actions and great achievements. He was the son of Cambyfes king of Persia, by his queen Mandana, the daughter of Astyages king of Media, who was son to Cyaxares, grandson to Phraortes, and great grandson to Deioces, the first absolute king of Media. Cyrus reigned seventy years, and dying, was succeeded by his son Cambyfes, who invaded Egypt, vanquished Psammiticus the king, and added that kingdom to his empire. He demolished the Egyptian god Apis, murdered his brother Smerdis, and his sister; and died in the eighth year, infamous for cruelty and lust. On his death, (or indeed some time before) the Magi, or Magians, seized the empire, and set up an impostor, who they pretended was Smerdis, the true son of Cambyfes; but this false Smerdis having before lost his ears, the cheat was soon discovered by his wife Phedyma; and both he and all his sect of the Magians were slain. Note, the foregoing Cambyfes and Smerdis were the Ahasuerus and Artaxerxes of the Scripture, Ezr. iv. 5, 6, 7. Smerdis being slain in the first year of his usurpation, they chose Darius Hyftaspes king, under whom the Babylonians revolting, Darius besieged them, and, after twelve months, took their city, beat down the walls, and gave the inhabitants for a spoil to the Persians. He made war on the Scythians with great loss to himself, subdued Thrace, and afterward India. He reduced the Hellespont and Thracian Chersonesus. He fought a battle with the Greeks, but was discomfited at Marathon. After thirty-six years reign, he declares Xerxes his successor, and dies. Xerxes thoroughly reduced Egypt after a revolt; he marched with a prodigious army against Greece, and lost the battle of Salamis. He destroyed the temple of Bel at Babylon. He was defeated in many wars against the Grecians, by armies com-
manded

manded by the generals Pausanias, Aristides, Themistocles, Cimon, &c. and at last was slain by the treason of Artabanus, in the 21st year of his reign. He was succeeded by his son Artaxerxes Longimanus (the Ahasuerus of Esther.) He slew Artabanus, conquered his brother Hytaspes, and became thoroughly settled on the throne. He divorced Vashti his queen, and chose the virgin Esther for his concubine. He sent Ezra to govern Judæa. Egypt revolts, but is reduced. Haman is put to death. Artaxerxes is defeated by Cimon the Athenian general, and therefore makes a peace with them. Nehemiah is sent governor to Judæa, who re-peoples the city, and reforms the church and state of the Jews. Meto begins his cycle. About the 36th year of this reign the prophet Malachi flourished. In the 41st year of his reign Artaxerxes dying, was succeeded by his son Xerxes, who was presently slain by Sogdianus, and he by Ochus, who with the crown assumed the name of Darius, and is commonly called Darius Nothus. The Egyptians revolt from him, and make Amyrtæus their king. He dies in the 19th year of his reign, and is succeeded by Artaxerxes Mnemon, his eldest son. He defends his country against the Lacedemonians and Athenians, and makes a peace with them. The Persians conquer Cyprus. Artaxerxes dies in the 46th year of his reign, and is succeeded by Ochus his son. Upon his succession great revolts were made in the empire. Ochus takes and destroys Sidon, he invades Egypt, expels king Nectanebus, and reduces all the country. He is poisoned by Bargoas in the 21st year of his reign, and Arogus or Arses made king in his stead. Bargoas also poisoned him in the second year of his reign, and made his friend Codomannus to succeed him, who then assumed the royal name of Darius, and perceiving Bargoas had a design of poisoning him too, he put him to death. Alexander, the son of Philip, late king of Macedon, being made general of the Grecians against the Persians, he defeated Darius in three battles, of Granicus, Cilicia, and Arbela, and conquered all Asia, by which means the empire of the Persians was transferred to the Grecians, after it had stood about 205 years,

years, and in the 4th year of Darius, the last king thereof.

Alexander, surnamed the Great, was born at Pella in Macedonia, and gave many surprising proofs of his courage and dexterity during his youth; especially in mounting and taming his father's fierce horse, which none of his equerries could do; whereupon, when he dismounted, king Philip his father told him, with a kiss, he should go and seek other kingdoms, for Macedonia was too little for him. According as he grew in years, he signalized his valour in many wonderful instances; and at last succeeding his father as general of the Grecian armies, he passed into Asia, and won the battle of Granicus, where he defeated the Persian king Darius; and the next year reduced all Lesser Asia, and won the battle of Issus, where he again defeated Darius, and took his mother, wife, and daughters, but treated them according to their quality. After this he marched into Syria, took Tyre and Gaza, and destroyed them both. He went to besiege Jerusalem, but was prevented by Jaddus the high-priest, who met him in his vestments, and read to him Daniel's prophecy, which foretold he should conquer the Persians; this so pleased him, that he made presents to the priest, and left the Jews in freedom. Soon after, he conquered Egypt; and the next year, which was 331 before Christ, he began to reign as emperor of Asia, and passing the Euphrates and Tigris, won the battle of Arbela, and took Babylon, Susa, Persopolis, and the provinces belonging to them. In his second year Darius was slain, and he subdued the Medes, Parthians, Hyrcanians, Arians, &c. and the next year the Bactrians and Sogdians; and put Bessus to death as a traitor to Darius, and an usurper of his kingdom. In his fourth year, he married Roxana, the daughter of Oxyathres, a noble Persian, and passing to India, conquered all to the river Indus; and the next year, he conquered all beyond the Indus to the river Hyphasis; and returning home by the Indus, conquered several nations in his way. Two years after, he conquered the Cossæans, to divert his grief for the loss of his boon companion and favourite Hephestion, who killed himself by drinking the year before. After this he passed

Of the Grecian
monarchy be-
gun in Alexan-
der the Great,

The death of Alexander. passed to Babylon; during his stay here, he laid aside his former modesty, and gave himself up to all manner of debauchery and luxury, especially drinking, by the excess of which he contracted a fever, whereof he died, in the ninth year of his reign, and the thirty-third of his age. And here ended all the designs of this great and vain-glorious prince. Never had any man a greater run of success than he, who in the space of twelve years subdued all the nations and countries from the Adriatic sea to the Ganges, the greater part of the then known habitable world.

The great confusions ensuing thereon. On the death of Alexander, there arose great confusions among his followers about the succession. At length they agreed that Aridæus, a bastard brother of Alexander, should succeed on the throne; but being an idiot, the government of the empire was divided among the chief commanders of the army, who were sometimes content with the name of governors, but at length took that of kings, as having the authority from the first. As soon as they were settled in their provinces, they all fell to leaguings and warring against each other, till they were, after some years, all destroyed to four. These were Cassander, Lyfimachus, Ptolomy, and Seleucus.

The division of the empire. These four divided the whole empire thus; Cassander had Macedon and Greece; Lyfimachus had Thrace, and those parts of Asia which lay upon the Hellespont and Bosphorus; to Ptolomy fell Egypt, Lybia, Arabia, Palestine, and Cœlo-Syria; and Seleucus Upper Syria, and all the rest.

The extinction of Alexander's family and empire. Aridæus being made nominal king of Persia, had his name changed for that of Philip, and thus reigned seven years, when Olympias, the mother of Alexander, caused him to be put to death, with Eurydice his wife, and several others. After which Alexander Ægus, the son of Alexander and Roxana, bore the title of king, till Cassander, about seven years after, put both him and his mother to death, that he might, without interruption, seize on the kingdom of Macedon himself, as he accordingly did. And thus both the family and empire of Alexander the Great became entirely extinct.

Cassander

Cassander having governed Macedon from the death of his father Antipater nineteen years, died of a dropsy; and Philip, his eldest son, succeeded, who dying soon after, left the crown to be contended for by his brothers Antipater and Alexander; of whom the first was driven to banishment for the impious murder of his mother Thessalonice, and the latter slain by Demetrius, son of Antigonus, who thereupon obtained the kingdom of Macedon for seven years. Thus the royal family of Philip, king of Macedon, became utterly extinct. After this the kingdom of Macedon continued till Perseus, the last king thereof, was vanquished by Paulus Æmilius, the Roman consul; and then it was made a province of the Roman empire, after having been a kingdom under thirty kings for 933 years. This happened 168 years before Christ.

Cassander governs Macedon.

Ptolemy being settled on the throne of Egypt, began his reign in the 304th year before Christ. He was surnamed by some Soter, by others from his father Lagus. After twenty years reign, he resigned his kingdom to his youngest son, Ptolemy Philadelphus. This kingdom subsisted under thirteen sovereigns, the last of whom was Cleopatra, the most beautiful and accomplished woman in the world, but excessively given to pride and voluptuousness. Her husband was the famous Mark Anthony, whom Octavius, Julius Cæsar's nephew, conquered at the battle of Actium, and thereby reduced Egypt to a Roman province, after it had stood a kingdom in the Ptolemean race 273 years, that is, in the 31st year before Christ.

Of the Ptolemean kingdom in Egypt.

Seleucus growing very great in the East, at length got the dominion of Media, Assyria, and Babylon; and afterwards that of Persia, Bactria, Hyrcania, and all the other provinces on this side the Indus, which Alexander before had made himself master of. And thus he re-established a kingdom over Asia Minor and Syria, which became a theatre of many terrible and horrid tragedies under the Antiochus's, &c. who succeeded. This Asiatic monarchy lasted till Gabinius, the Roman consul, vanquished Seleucus Cybiosactes, the last of the Seleucian race, and set up a new form of government in the land, about 57 years before Christ.

Of the Seleucian race in Syria, &c.

Christ. So this kingdom stood about 260 years; though others more properly terminate this monarchy about nine years before, when Pompey the Great vanquished Tygranes, king of Syria, and reduced the country to the form of a Roman province.

Lyfimachus
not successful;

Lyfimachus, the last of the four captains of Alexander, who divided his empire, had not the fortune of the other three in laying the foundation, and being first in a monarchy; for he was defeated and slain in battle by Seleucus, who thereby became master of all his dominions.

As to the state of the Jews during the periods of the Grecian and Roman empires, I have already briefly related it in the fourth chapter hereof, and therefore need not here repeat it. The next great revolution in the fortune of the world let us view in the fourth and last great and universal monarchy, viz. that of the Roman empire.

The consular
state of Rome.

After the abolition of the regal power, the first state of Rome, the Consulate was instituted; which was a power, or sovereignty, with which two magistrates, annually elected, were invested; the senate was their council, and they decided all affairs, but there lay an appeal to the people; which made this no other than a republic or democracy. The first who enjoyed this consular dignity were L. Junius Brutus, and L. Tarquinius Collatinus, who began their government A.M. 3545, and of Rome 244.

The Trium-
virate.

The Roman affairs were administered by the consuls for the space of about 470 years; when Julius Cæsar formed the famous Triumvirate between himself and Pompey and Crassus; by which means the whole power of the Roman state became in a manner engrossed by these three potentates, who divided it among themselves. This laid the first foundation of the civil wars which afterwards broke out between Pompey and Cæsar, and at length ended in the destruction of the old Roman government, by changing it from a republic to a monarchy.

The begin-
ning of the
Roman mo-
narchy under
Julius Cæsar,

Under this republican state, Rome, by degrees, made herself mistress of most of the principal kingdoms and states of the known world, by the courage and successful enterprizes of her consuls from time to time,

time, but most particularly of Julius Cæsar, whose ambition reached to universal dominion and sovereignty; which at length he atchieved, going on conquering and to conquer, in all the habitable parts of Asia, Africa, and Europe, which he effectually reduced to the obedience of Rome; and on his return made a triumphal entrance into the city. The senate and people submitted to him, and made him perpetual dictator.

The Roman state being thus changed to a monarchy in Julius Cæsar, he became the first sole emperor of the world among the Romans, and laid the foundation of the fourth monarchy. He was at last slain in the senate-house, in the 56th year of his age, and the 44th before Christ. Octavius, the nephew of Cæsar, having conquered Brutus and Cassius, was declared Augustus, and master of the empire. His reign was honoured with the birth of our Saviour. He died in the 44th year thereof, and was succeeded by Tiberius Cæsar; and after him succeeded Caligula, Claudius, Nero, Galba, Otho, Vitellius, Vespasian, Titus, and Domitian, who was the last of the twelve Cæsars. The two greatest events during this period were the crucifixion of our Saviour in the reign of Tiberius, and the destruction of the temple and city of Jerusalem, and the total extirpation of the Jewish state and nation under Vespasian, and Titus his son.

The Roman monarchy under the twelve Cæsars.

After the Julian family, there was a succession of 31 emperors from Nerva (who succeeded Domitian in A.D. 96) to Constantine the Great, who began to reign A.D. 306. He removed the seat of the empire from Rome to Byzantium, which city he built, and called it at first New Rome, but afterwards Constantinople. He divided the empire among his three sons, Constantine, Constantius, and Constans; and died May 22, 337, in the 66th year of his age.

The empire divided by Constantine the Great among his sons.

Of these three sons, Constans had the East, Asia, and Egypt, for his share; Constantine had Gaul, Spain, and Great-Britain; and Constantius had Italy, Africa, and Illyrium; but Constans survived the other two, and became sole master of the empire; who dying in the 45th year of his age, was succeeded by

The same again divided by Theodosius in the Eastern and Western empire.

Julian.

Julian the Apostate in A.D. 361, Jovian 363, Valentinian 364; Valens and Gratian 375; and at last Theodosius the Great, who had defeated the Goths, Alans, and Huns; and was baptized at 44 years of age, and died at the 60th, and A.D. 395, having left the empire of the East to his son Arcadius, and that of the West to his son Honorius.

The western empire under 10 emperors.

From Honorius there are reckoned about 10 emperors of the Western empire to Augustulus inclusively; who came to the throne A.D. 475. During this period the empire was in a declining state, and became a prey to several barbarous nations, who continued their invasions upon it from the year 400 to 600. The chief of which were the Goths, Ostrogoths, Vandals, and Lombards; the Daci, Samartæ, Heruli, Suevi; the Picts, the Huns, Alans, and Scythians: all which were antient people and nations of Europe and Asia. Among these

Of the Goths and Ostrogoths in Italy.

Odoacer, king of the Heruli, subdued Augustulus in the first or second year of his reign, and was himself defeated in the 17th year of his reign, by Theodoric II. king of the Goths, who succeeded in A.D. 493, and began the reign of the Ostrogoths. From him succeeded eight kings, of whom Tejas was the last, who was defeated by Narses, Justinian's general, in 553; and thus the kingdom of the Ostrogoths in Italy ceased after a continuance of 92 years.

The kingdom of the Lombards in Italy.

This Narses, being disgusted by the empress, &c. called the Lombards from Germany into Italy, where they settled and formed a new monarchy; the first king of which was Alboin, who came to the crown in 568, and the last was Didier or Desiderius in 774, in all twenty-two kings. This Didier having seized on the patrimony of the church, Charlemagne came against him, and took him; which put an end to the kingdom of the Lombards, that had lasted 206 years.

The Eastern empire.

Arcadius, son to Theodosius the Great, succeeded his father as emperor of the East, A.D. 395. From him there followed a succession of sixty-four emperors, of whom Alexis V. was the last. Prince Henry, brother to Baldwin, count of Flanders, made war upon him, defeated him, and put him to flight; and

and took the city of Constantinople in A. D. 1204. So the eastern branch of the empire continued entire 809 years.

After this the Greeks falling out with the French, and other Western Christians, they divided their empire into two, under Alexis Comnenus and Lascaris; while Baldwin remained possessed of the royal city, and good part of the empire, which the Latins had seized on because the Greeks did not reimburse their charge for restoring young Alexis and Isaac. By this means the empire was divided into three parts, which, after some time, were all swallowed up by the Turks.

Divisions thereof, between Alexis Comnenus, Lascaris, and Baldwin.

Baldwin, count of Flanders, was elected emperor at Constantinople by the Latins, A. D. 1204. After him succeeded thirteen emperors; the last of which, Constantine XIII. or XV. was slain in battle by the Turks under sultan Mahomet II. who ravaged Greece, took Constantinople, and put an end to the Christian empire there, about A. D. 1455.

Alexis Comnenus, under the aforesaid division of the empire, made Trebifond, a town in Natolia, on the Euxine sea, his capital, A. D. 1204; and governed over Cappadocia, Paphlagonia, Pontus, and some other provinces in Asia Minor. To him succeeded eight emperors, of whom the last was David. Mean while Theodorus Lascaris reigned at Adrianople, and after him four others, of whom Theodorus III. was the last; in whose time Mahomet II. seized both the empires of Trebifond and Adrianople.

The Greek empire being thus totally extinct in that of the Turks, let us return to that of the Latins; where we find Charlemagne, or Charles the Great, son to Pepin king of France, restored the empire of the West, and removed the royal seat from Rome into Germany; where he was anointed and crowned emperor by pope Leo III. on Christmas-day, A. D. 800. He before had rescued Italy from the tyranny of the Lombards, and annexed their dominions to the kingdom of the Franks. He was at the same time master of Germany, France, Italy, and part of Spain. He died A. D. 814, in the 72d year of his age. Before his time Germany (like most other

Of Charlemagne, who began the German empire.

The imperial
families of
Germany.

other countries of Europe) was a composition of several independent democracies. But he reduced the whole under his jurisdiction.

The Carolinian family continued till the death of Conrade, duke of Franconia, A. D. 919, when the crown devolved to the Saxons in Henry duke of Saxony, where the imperial dignity continued till the death of Henry II. A. D. 1024. Then it again returned to the Carolinian family in Conrad II. where it remained till A. D. 1125, when it again reverted to the Saxons in Lotharius, duke of Saxony; on whose death the crown was settled in the Suabian family, when Conrad III. duke of Suabia, was elected emperor, A. D. 1138, where it continued (though not without interruption) till the execution of Conradin, the last of that family. Whereupon Germany was reduced to anarchy and confusion, till A. D. 1273, when Rudolph, earl of Habsburg, and landgrave of Alsace, was unanimously chosen emperor; from whom descended Frederick III. duke of Austria, who was crowned A. D. 1490, and in whose house the imperial dignity has continued to this day.

Short history
of Spain.

Spain was antiently inhabited by the Gallic Celts, Rhodians, Phœnicians, Cantabrians, and Carthaginians; the latter of which being dispossessed by the Romans, Spain became a Roman province, and so continued till the declension of the Western Empire, upon which it was over-run first by the Vandals, then by the Suevians, and at last the Goths obtained the government of the emperor Honorius, where they reigned from Adolph the first king, who entered Spain A. D. 411, till A. D. 713, Roderick the 34th and last king was defeated by the African Saracens, or Moors, or Arabians, who were all the same people. The Moors divided Spain into several petty kingdoms, which continued between 7 and 800 years, viz. to the year 1492, in which they were totally extirpated by Ferdinand V. king of Castile. The Suevian kings were ten; they reigned in Galicia from A. D. 408 to 585. The kings of Leon were twenty-four; who reigned from A. D. 717 to 1028. The kings of Granada were twenty-two; who reigned from A. D.

1238 to 1492: The kings of Arragon twenty; they reigned from A.D. 1037 to 1516. The kings of Navarre 38; they reigned from A.D. 722 to Henry IV. of France, 1589. The kings of Castile reigned from A.D. 1038 to this time.

Portugal having been a Roman province till the declension of the Western empire, and being thereupon possessed by the Goths, fell with the rest of Spain into the hands of the Moors, A.D. 713; under whom it continued till 1100, when it was recovered by Henry of Burgundy; whose son Alphonfus shook off the Spanish yoke, and was proclaimed king of Portugal A.D. 1139. It continued a separate kingdom till 1580, when Philip II. king of Spain, united it to Spain. But in 1640, the Portuguese again shook off the Spanish yoke, and chose for their king the duke of Braganza, under the name of John IV. whose posterity enjoys the crown to this day.

Of Portugal.

France was antiently inhabited by the Gauls, who in a plurality of independent states were conquered by the Romans in the time of Julius Cæsar, and France became a Roman province; which it continued to be till about 500 years afterwards, when it was over-run by the Goths and Burgundians, and at last by the Franks, a people of Germany, who chose Pharamund for their first king, A.D. 424; from whose kinsman and successor Meroveus came the Merovingian race, which endured till Charles the Great, the son of Pepin, founded the Carlovingian family, A.D. 770, who enjoyed the crown till A.D. 987. Hugh Capet was made king, the first of the present (from him called the) Capetian race of thirty kings, the last of whom was the late French king, Lewis XV.

Of France.

Italy, on the dissolution of the civil monarchy, by degrees acquired a spiritual one or hierarchy, or government by popes. For though the popes had not the administration of the civil power from the beginning, yet they have had it for a long time past; and are said not only to over-see as bishops, but to reign as secular princes. And the ecclesiastical state is absolutely the pope's kingdom, which he governs by himself and legates, as a temporal lord, since the eighth century, that Pepin king of France, and his son

Of Italy;

Charles, gave it to the church. As to the other parts of Italy, they are divided into several duchies, as Savoy, Tuscany, Milan, &c. Republics, as Venice, Genoa, &c. Kingdoms, as Naples, Sicily, and Sardinia.

Of Hungary.

Hungary was in old times subject to the Huns, till about the eighth century a Scythian nation called Hungari dislodged them, possessed and gave name to the country. They were governed by chiefs or dukes till the time of St. Stephen, who was crowned king of Hungary A.D. 1000, after whom succeeded a regency of forty-five or forty-six kings, to the present time; Joseph, the late emperor of Germany, being crowned king of Hungary A.D. 1687.

Of Switzerland.

Switzerland, upon the decay of the Roman empire, maintained its liberty under the kings of Burgundy, Austria, France, &c. who have interchangeably possessed and contended for it for 500 years past. Its present state is a republic of thirteen cantons or districts, seven of which are governed by an aristocracy, none but the burghers having any share in the government. The other six are democratical, all the inhabitants being admitted to the government.

Of Belgium, or the Netherlands.

Belgium, which contains the Netherlands, or countries of Holland and Flanders, was antiently a part of the Roman empire, being subdued by Julius Cæsar and Augustus; under which it continued till the time of Theodosius, when the empire being over-run, several people of Germany made descents upon it, one after another. But in process of time they recovered their liberty, and all this country was divided into seventeen provinces; some governed by dukes, others by counts, one by a marquis, and five by lords, of which Friezland was one; which, having shook off the yoke, was governed by kings for near 400 years. Holland and Zealand were governed by counts from A.D. 863 to 1558, when Philip II. of Spain was their last count; from whom they revolted, and formed themselves into their present commonwealth in the union of Utrecht, A.D. 1579. Flanders was under earls, from A.D. 621 to 860, when Baldwin was made their first count; by which sovereigns they were

were after governed till they fell to the house of Austria under the emperor Charles V. and then to the crown of Spain under his son Philip II. to which they continue still to pay obedience.

Muscovy is, as to its history, involved in ignorance and obscurity. Prince Woldomir introduced christianity here A. D. 988. After this we know little till they became a prey to the Tartars, when their prince, George, was defeated by the Tartarian king Batto, A. D. 1273; who ruled them under hard terms, till (A. D. 1450) prince John delivered them, and erected the numerous petty principalities into one body. Thus they continued under various fortunes, till the nobility chose Michael Feodorowitz, who, by his accession to the throne in 1613, began the race of Alexiewitz, the present royal family. Of Muscovy.

Poland being abdicated by its antient inhabitants, fell in A. D. 550 into the hands of a vagrant people, under the conduct of one Lechus, who founded the government of the Lechidæ, which continued till the Woiewoods or twelve governors, who polished this rude and barbarous people; but at last falling into parties, the people were obliged to chuse a king, who was Cracus, who restored the republic to its tranquillity A. D. 700. In A. D. 820, the Poles exalted to the throne one Piaftum, a wheelwright. His posterity, called the Piafti, long enjoyed it; till at last, A. D. 1382, the crown devolved to Jagello, duke of Lithuania, who founded the Jagellonian family, which became extinct A. D. 1548, when their kings became elective; of which Henry de Valois, duke of Anjou, was the first. Of Poland.

Sweden is said to have been in the state of a kingdom soon after the deluge, which is said to have continued till the 100th year of Rome, when it became a republic, which lasted 250 years. Monarchy was re-established by Eric II. whose posterity continued till A. D. 455, through twenty-one successors. In A. D. 829, the Swedes embraced christianity. In A. D. 1396, Sweden, Norway, and Denmark, were united in the union of Calmar, which lasted not long: for in A. D. 1449, Norway and Denmark chose a king, whose posterity had several various adventures Of Sweden.

adventures with the Swedes, who were miserably harrassed by them, till A. D. 1528, when Gustavus Ericson shook off the Danish yoke, and was proclaimed king; and in 1544 the crown was made hereditary to his family, wherein it continues to this day.

Of Denmark.

Denmark is one of the most ancient kingdoms of Europe. One Danus, or Dan, is reported to be the first of their kings, who headed the Cimbri and Goths when they invaded and ravaged Germany. About our Saviour's birth Frotho III. governed them. A. D. 846, Eric I. began to reign, and introduced christianity. In 1012, Canute II. came to the crown, who afterwards was also king of England, Sweden, Norway, &c. He was buried at Winchester in 1036. In 1396 was the union of Norway, Denmark, and Sweden, under Margaret queen of Norway: and in A. D. 1449, Christian earl of Oldenburg was declared king of the Danes and Norwegians, in whose family those two crowns have remained ever since.

Of Norway.

Norway, in its original state, is very obscure. In A. M. 3960, Frotho was king, who was succeeded by sixteen kings, the last of whom, Lodbrog, was contemporary with Charlemagne. Sigifordus reigned A. D. 798; and in 868 Harold Harfoger was their sole king, who died in 931, and his race were kings of Norway 500 years. In A. D. 1396 was the union of the three kingdoms, as before mentioned, and which remains to this day between Norway and Denmark.

Of the rise of the Mahometan empire.

If now we return and review the modern history of Asia, we shall there meet with one of the greatest revolutions that ever happened in the world; I mean that occasioned by the impostor Mahomet, which gave birth to an empire, which in eighty years extended itself over more kingdoms and countries than did the Roman in 800. And though it continued not above 300 years, yet out of its ashes have sprung many others, of which there are three still remaining, the largest and most potent empires in the world, viz. the Turkish, Persian, and that of the Mogul.

The Caliphs.

After the impostor's death, Ebubezer his father-in-law, and one of his chief captains, took upon him the imperial power, A. D. 622, who was succeeded by

by twenty-four others, by the name of Caliphs, the last of whom was Mahomet IV. who ended his reign about A. D. 872. These caliphs, or Saracen emperors, by degrees extended their conquests over Persia, Egypt, Palestine, Syria, all Barbary, Rhodes, Cyprus, Asia Minor, Armenia, Greece, Constantinople, all Italy, &c. But about 325 years after the impostor's death, the governors of the provinces took the regal power on themselves, and left the caliphs nothing but the shadow of their authority. At last they divided into caliphs and anti-caliphs, till the Tartars put an end to the pretensions of both, under the famous emperor Tamerlane the Great.

The Turks were a people first known by the name of Turcæ, about the lake of Mæotis, and not much heard of till A. D. 577. In 619 they are mentioned at the siege of Constantinople, under the command of the Persians. After which they set up for themselves, and in A. D. 736 invaded Albania, and other countries on the Caspian and Euxine sea. In 844, they possessed themselves of Armenia Major, and called it Turcomania. Here they lived in no great figure, till Mahomet the sultan of Persia rebelling against the caliph of Baby^{lon}, called them to his assistance; who came under Tangrolipix their leader, and procured the sultan a signal victory.

The original
of the Turks.

The said sultan Mahomet not giving them the promised rewards, nor yet leave to return home, they, being justly enraged, began to mutiny, and plundered the country, at last fought with, defeated the sultan, and killed him. His army, dissatisfied with his conduct, joined with the Turks, and made Tangrolipix sultan of Persia, A. D. 1030. His race continued till A. D. 1198, when Cassanes, the last of the Turkish line, came to the crown. He was vanquished by the Cham of Tartary in 1202, when the Tartarian race began in Cingis Chan. Tamerlane the Great conquered the whole empire, whose son succeeded in A. D. 1405, and his line became extinct in Ioancha, who was defeated in A. D. 1472, by Ussan Cassan, an Armenian prince, whose posterity continued till Alamatz, or Hagarat; the last whereof was defeated,

The rise of the
Persian em-
pire from the
Turks.

A. D. 1505, by Ismaël Sophi, who then founded the Sophian family, who continue monarchs of Persia to the present time.

Of the origin
of the Otto-
man empire.

Ottoman, the son of Ethrogul, the son of Solyman, (who was drove out of Persia by the Tartars) was about A. D. 1290 saluted with the title of governor of the Oguzian Turks in Asia, and soon after with that of the lord Ottoman or Osman. This great prince afterwards took and spoiled the rich city Nice; and the chief sultan dying A. D. 1300, Ottoman was advanced in his stead, and then founded the great Turkish empire in the East under the Ottoman race, who have continued to this day in a succession of twenty-four or twenty-five sultans from him. But the famous Persian general Thamas Kouli Can has given them many shocking strokes of late, and his armies have lately been very victorious against them; on which account the Persians have deposed their late sophi, and elected him their emperor or sophi.

Of the Turkish
kingdom in
Asia.

The Turkish kingdom of Iconium began A. D. 1072 in Cutlumefes, a relation to Tangrolipix, who possessed himself of that country, and afterwards of several others in Asia Minor. He had fifteen successors, of whom Melec was the last ^{at} in 1261, who was driven into exile; and thereby a way was made for the Ottoman line. We read of the races of other Turkish kings in Asia Minor at the beginning of their empire, but they all gave way at last to the Ottoman line. The chief of these was the race of Turkish kings at Damascus, which Tangrolipix founded in the persons of his kinsmen Melech and Ducat, who began to reign over Syria, &c. A. D. 1075. After them succeeded nine others, till the last, viz. Saphradine, was taken by the Tartars, A. D. 1262; who, on the death of Tamerlane, were obliged to quit it to the Mamalucks, a military order of people in Egypt under the Saracens, which subdued Syria and Egypt, and kept Damascus till A. D. 1516, when it was again recovered by the Turks. The seat of the Turkish empire hath been at Constantinople since Mahomet II. and eighth of the Ottoman family, took it, A. D. 1455, or thereabouts.

The Mاما-
lucks who.

Great

Great Tartary (or more rightly Tatar) is said to have had for its first emperor Cingis Chan; and though the government was absolute and tyrannical, yet it was elective; for the grandees of the country chose his son Occady to succeed him about A. D. 1168. In his time the name of the Tartars was first known, and became formidable in Europe. To him succeeded Zain-Chan, or Bar-Cham, then Gino-Cham; and by his daughter the empire was conveyed to her husband Tamerlane the Great, who made indeed so great a figure in the world, that he is reckoned equal to Cyrus or Alexander. He was born A. D. 1335. He was master of all the learning of those days, and was of a most gentle, mild, and affable temper, attended with a natural greatness and heroic spirit and valour. He was an enemy to idolatry, and gave liberty of conscience to all who worshipped God, the Creator of all things; wherefore God blessed him with wonderful success in his enterprizes: for, under his Christian general Axalla, he subdued the Muscovites; after that China, made the kings thereof tributary to him, and destroyed idolatry there. After this he defeated the Turks, took their sultan Bajazet prisoner, and reproached him for fighting against the Christian interest. Hereupon most of the provinces of Asia submitted to this new conqueror. Then he made war upon the sultan of Egypt, conquered the country, with the greatest part of Africa, Syria, Judæa, &c. and paid the highest reverence and devotion to Christ at his sepulchre in Jerusalem. He extended his conquest to the Indies, and founded there the empire of the Moguls. He died in the 66th year of his age, A. D. 1425. The great Maurice of Nassau, prince of Orange, always carried the history of him in his pocket, and preferred it to Cæsar's Commentaries, or Xenophon's Cyropædia. It is said he subdued more countries in eight years, than the Romans did in eight hundred. After him there were about six successors, the last of whom was Demir-Cham, in 1540, or thereabouts. In Eastern Tartary, Bohun names a catalogue of six kings, who reigned from A. D. 1550 to Cham-Hi, the last, who began to reign

Of Great Tartary and its history.

Short history of Tamerlane the Great.

over Tartary and China in 1661, and in 1680 he perfected the conquest of China, and was reckoned to be the greatest prince in the world.

Of the empire of the Moguls. The empire of the Moguls in India was founded, as I said, by Tamerlane, who was the first emperor thereof. His son Miracha succeeded in A. D. 1405. After him nine others succeeded to the crown; of whom the last, Bardour-Chah, began to reign A. D. 1708.

Of the Chinese history. The Chinese suppose that the first man was their first governor, was called Puoncuus, and had his origin from somewhat like an egg. How this country was first peopled is uncertain. The first king they speak of with any certainty is Fohius, or Fohi, who some think was Noah. It is said he was succeeded by Xinungus 2730 years before Christ. Yvus was the last of the elected emperors, and founded the imperial race of Hiaa, which was about 2207 years before Christ. This continued in a line of seventeen emperors; to which the family of Xanga succeeded, about 1766 years before Christ. This produced twenty-eight emperors, and lasted till about 1122 years before Christ; when the family of Cheva succeeded, which produced thirty-seven emperors, and ended 246 years before Christ. This was succeeded by the family of Civa or Xius, in the year before Christ 206. This by the family of Hana, which lasted to A. D. 264. This was subdued by that of Cyna, which lasted till A. D. 419, in five kings. Then the family of Tanga followed, which lasted till A. D. 618. These were succeeded by the race of Sunga, which governed till A. D. 1278, when the Tartars, after seventy-three years war, subdued the empire, extirpated the family, and founded a new one, called Ivena, which lasted till A. D. 1368, when the Tartars were expelled, and one Xunguons founded the race of Taicinga, who held the throne till A. D. 1644; when the Tartars again conquered the country, and set up their great Cham Xunchius, who was succeeded by his son Cham-Hi, in A. D. 1661, as was before related in the history of Great Tartary.

Japan

Japan is a mighty empire, the court far outshining any in Europe. But because this island was not discovered till the sixteenth century, or about A. D. 1540, we have no account of the genealogy and succession of emperors, but that they are great and absolute lords, and are adored by their subjects.

In America the several nations and countries discovered by the Europeans are under their government. Thus Mexico, great part of Granada, Terra Firma, Peru, Chili, part of Paraguay, &c. belong to the Spaniards. New-England, New-York, Pennsylvania, New-Jersey, Maryland, Virginia, Carolina, &c. to the English. And other countries and islands to the French, Dutch, &c.

Of American governments.

Of



OF PHYSIOLOGY, or NATURAL PHILOSOPHY.

Physiology
defined.

PHYSCIOLOGY, according to its derivation, signifies a Discourse concerning Nature, or the Nature of Bodies in general; and hence it is used to denote that science or study which enquires into and investigates the causes, properties and effects of all natural bodies objected to our sight, or falling under the cognizance of any of our senses. For this reason this study has long been call'd physics, and philosophy, or more commonly natural philosophy; and those who are skilled therein are called physiologists, naturalists, and natural philosophers.

Its subject.

The subject of this most excellent science being no less than the wide and almost boundless field of sensible nature, the science itself must needs be exceeding great, and of the last importance; of which we shall proceed to give the following short, yet comprehensive sketch.

Its parts.

Somatology.

Uranology.

Aerology.

Geology.

Natural Philosophy then may be properly divided into four parts, viz. (1.) Somatology, which contemplates the nature of matter in general, its properties, accidents, and various modifications, in all natural bodies. (2.) Uranology, which discourseth of the constitution of the heavens, and the great bodies of the sun, moon, and planets therein. (3.) Aerology, which treats of the nature of the atmosphere, and the various meteors thereof. (4.) Geology, which takes a view of the earth and sea, with all their various productions.

OF SOMATOLOGY.

Of somatology.

Somatology is (according to its etymon) the doctrine of natural bodies, and considers the original and essential properties of matter, of which they are variously composed.

Matter

Matter itself is that which we generally call the substance of things, or that of which all things do consist, under different forms and modes. Of matter.

The properties of matter or body are twofold, viz. Its properties, (1.) Essential and common to all bodies. (2.) Specific and accidental, which happen to bodies not necessarily from the nature of matter, but casually and comparatively only. essential or accidental.

The essential properties of all bodies or matter are these; (1.) Extension, for all matter is extended. Essential properties.
(2.) Solidity, for every particle of matter is impenetrable. (3.) Divisibility, for all matter may be divided into still lesser parts. (4.) Mobility, for all bodies are capable of motion. (5.) Figurability, all bodies having some form or figure. (6.) Gravity, for all bodies have some weight. (7.) Mensurability, for all bodies have some dimensions. (8.) Inactivity, for no matter can act or move of itself. (9.) Ubiquity, for all bodies occupy some place. (10.) Durability, for no part of matter can be annihilated.

Extension is the quantity of bulk or size into which the particles of matter are disposed, or extended; for there is no body which has not length, breadth, and thickness, which make what we call the extension of bodies. Of extension.

Solidity is that property of body, whereby it excludes all others out of the place which it possesseth; for no two bodies can possibly be in one and the same place at the same time. Hence the matter of the softest bodies is equally solid with that of the hardest. Thus a cubic inch of water will, no more than a cubic inch of adamant, be compressed into less than a cubic inch of space. Solidity.

Divisibility is a property of matter which follows from the last; for since two particles of body cannot exist together, or in the same place, it is necessary they should exist separately, or in different places; and so may be considered as distinct or separate from each other, which is all that is meant by their being divided. The actual division of matter is very surprising, as is manifest from the nature of odours, perfumes, tinctures, light, and several other experiments Divisibility.

ments on bodies. And the infinite divisibility of matter is easily proved by geometry.

Mobility. Mobility is a property which follows from the divisibility of matter, and its being finite; for since matter is divisible into parts, and does not fill all space, it is possible for one part of matter to be made to change its place, or be removed from one part of absolute space to another, which is called motion, or local motion of a body.

Figurability. Figurability is that universal property of body, whereby it is necessitated to appear in, or put on some shape or form or other; for since all particles of matter are finite, they must be contained within certain bounds or extremities, which must have some kind of mode or fashion; which, as it results from mere contingency, is infinitely various, and is called the formality or modification of bodies.

Gravity and attraction. Gravity is that universal disposition of matter, whereby a lesser part is carried towards the center of any greater part: thus all parts of matter, or bodies on the earth's huge surface, have a tendency to descend to its center or middle part: and this is called their weight; and gravitation in the lesser body, but attraction in the greater; because it does, as it were, attract and draw that lesser body to itself. Some distinguish attraction into that of cohesion and gravitation. Attraction of cohesion is that whereby very minute bodies, or the particles of the same body, are mutually drawn towards one another, and made to cohere and stick together. The sphere of this attraction is very small, for it acts only upon contact, or at very small distances, and in proportion to the surfaces of the attracting bodies. Attraction of gravitation is that whereby larger bodies attract and act upon one another, whose sphere of attraction is very great. This attraction is always proportional to the quantity of matter in bodies, and decreases as the squares of the distances between the centers of attracting bodies increase.

Electricity. Electricity is a kind of attraction and repulsion of very light bodies alternately, by certain polished surfaces chafed or heated by rubbing, or friction. Thus

Thus glass, sealing-wax, amber, and precious stones, attract and repel feathers, hairs, straws and other light bodies at considerable distances, as known by common experiments. Note, if a glass tube be emptied of air, it loses its electrical quality.

Magnetism is another very surprising species of attraction, which that fossil called the loadstone is endowed with. Every one knows its strange power of attracting and repelling iron; and the virtue it communicates to the mariner's compass, whereby it is determined to point to, or very near the north pole. Note, the magnet loses its quality by being made red-hot in the fire. Magnetism.

Gravity is distinguished into absolute and specific. Absolute gravity is that which every body has in itself simply considered; specific gravity is that which is considered in a body compared with the gravity of any other, and is said to be either greater, equal to, or lesser than it: thus if the gravity of fine gold be 11, and that of fine silver 6, the specific gravities of gold and silver are said to be to each other as 11 to 6. Note, in spaces void of air all bodies gravitate alike; or a feather and a stone, being let fall together, descend with equal velocity or swiftness. Absolute and specific gravity.

Mensurability is another universal property of bodies; for as all bodies are extended into the dimensions of length, breadth, and thickness, so it is possible for the contents or quantity of space included within those dimensions, or under the extremities of those bodies, to be compared, and the ratio or proportion between them found and determined; which is called the mensuration, or measuring of bodies. Mensurability.

Inactivity, or passiveness of matter, is its disposition to abide or continue in its state of motion or rest, till it is made to alter the same by the action of some external force. And from this principle are deduced those laws of motion, which are called the laws of nature by Sir Isaac Newton, viz. Inactivity.

Law I. All bodies continue in their state of rest or motion, uniformly in a right line, till they are obliged to change that state by the impression of external forces. Thus a wheel whirled round would always continue that circular motion, were it not for the resistance Of the laws of nature.

resistance it meets with from the air, and friction of the axle.

Law II. All change of motion is proportional to the power of the force which causes it, and in the same direction with the said force. This law is as evident as that every effect is proportionable to its cause.

Law III. Re-action is always equal and contrary to action; for when one body acts on another, that other body re-acts with equal force upon the first, and in a contrary direction. Thus when a sledge strikes the anvil, the anvil returns an equal stroke on the sledge, and makes it rebound. So when an horse draws a stone with a rope, the rope being equally strained throughout, plainly argues the stone stretches it equally with the horse, and therefore draws the horse as much as the horse draws it; and therefore since these forces are equal and contrary, they would destroy one another, i. e. neither horse nor stone would move, were it not that the horse obtains an additional force, by pushing or thrusting himself forwards against the ground.

Ubiquity.

Ubiquity is that affection of all bodies, whereby they necessarily take up and possess some place, or part of space.

Space.

Space is a mere void, infinitely extended every way; or it is that part of the universe in which nothing exists, or is entirely empty of all matter. And though all bodies must occupy or fill some part of this infinite void of space, and which is called their place; yet since matter is not infinite, it cannot fill infinite space completely, but there will be some interstices of empty space, which the philosophers call a vacuum, though the French (who have a superstitious philosophy as well as religion) are absurd enough to deny this most evident truth.

A vacuum.

Durability.

Durability, or duration of matter, may be reckoned another of its properties; since it is certain, that though the form and texture of bodies may be any how destroyed and changed, yet their substance cannot be destroyed, changed, nor diminished in the least; for to annihilate or reduce matter to mere nothing

nothing is as much an impossibility, as to produce it from mere nothing; and both, in the nature of things, as absurd to suppose, as motion in an absolute plenum, or any other inconsistency imaginable.

The specific or accidental properties, which are called the qualities of natural bodies, are next to be considered, and are these, viz. (1.) Light. (2.) Colours. (3.) Sound. (4.) Density and rarity. (5.) Transparency and opacity. (6.) Hardness and softness. (7.) Rigidity and flexibility. (8.) Consistence and fluidity. (9.) Heat and cold. (10.) Humidity and ficcidity. (11.) Elasticity. (12.) Odours and sapours.

Of the specific or accidental properties of matter.

Light is the quality of that sort of matter we call fire, which renders all objects from whence it proceeds visible, as well as those which receive it. It consists of very small particles, which come from the luminous or radiant body in right lines to the eyes, with such an incredible velocity, that the light arrives to us from the sun in about seven minutes and a half, which is about 81000000 miles, which is near 200000 miles in a second of time. The surfaces of most bodies reflect light, by which means they become visible and coloured; for those which reflect none appear dark and black. Light, in passing through any medium, as air, water, glass, &c. is refracted, or broke out of its straight course into another, which is nearer the perpendicular of the surface, if a thicker medium; but farther from it, if into a thinner medium. And this refrangibility of a ray of light is different in the several parts of it, according to the different colours contained therein; of which we shall next speak.

Of light.

Colour is that quality of bodies whereby they appear of some certain hue or complexion, and which is better known than described. The colours of bodies are all of them from the rays of light originally, and exist therein in the following order: (1.) Red. (2.) Orange. (3.) Yellow. (4.) Green. (5.) Blue. (6.) Indigo. (7.) Violet. When light is refracted, as through a prism, &c. the red-coloured rays fall lowest, and the violet the highest; the others fill the intermediate

Colour.

mediate spaces; all which are, in respect of quantity, in a musical or harmonical ratio; and bodies only appear red, yellow, blue, &c. because the matter of which they consist reflects a greater quantity of red, yellow, blue, &c. rays than of others; and those bodies which reflect promiscuously all the rays which fall on them appear white; and those which reflect none appear black, as has been said.

Sound.

Sound is an effect caused by striking of a sonorous body; for the tremulous motion of the parts occasioned thereby agitates the air, and produces such undulations or pulses thereof as are like to waves in water; these striking on the drum of the ear, excite the idea of sound in the brain by means of the optic nerve. It is propagated in concentric spheres around the sounding body. The air is the medium of sound, since none can be produced in an exhausted receiver in an air-pump. Sound flies at the rate of 1142 feet in a second of time, and may be heard at the distance of 180 or 200 miles. Echo is the reverberation or repercussion of a wave or pulse of air from the surface of obstacles, as vaults, &c. whence flying back, it strikes our ears with the same, but more obtuse sound than the first. Of sounds, there is great variety of tones, tunes, or notes, with respect to acuteness and gravity; some of which being pleasant and agreeable, are called concords, the others discords; from a various and artful composition of which arises the heavenly art of music.

Echo.

Density and rarity.

Density and rarity of bodies are commonly understood of their greater or lesser quantity of matter contained under the same bulk, and therefore the density of bodies is in a ratio compounded of the direct ratio of their quantities of matter, and a reciprocal ratio of their bulks. Thus if A has 8 parts of matter, and 5 degrees of magnitude, and B has 2 parts of matter, and 10 degrees of bulk, then the density of the body A will be to that of B, as 2×5 to 8×10 , that is, as 10 to 80, or as 1 to 8. The density of bodies is increased by heat, which, by dividing and expanding the particles of bodies, does attenuate and rarify them, and this is called rarefaction. On the contrary, cold, by

by uniting and combining the same particles, doth thicken and condense them, and this is called condensation, and in some cases coagulation.

Transparency is that quality in bodies whereby they transmit light through their substance, and by which means they become thoroughly enlightened, and objects are visible through them. Such bodies are said to be transparent, pellucid, or diaphanous, as water, glass, chrystal, &c. Transparency

Opacity is the opposite quality of bodies, and those bodies are said to be opaque, whose substance is dark and not transparent, and is occasioned by the light's being obstructed, or deflected from a right passage through them. Opacity.

Hardness is a quality of some bodies, arising from the mutual attraction of the most minute primogenial particles of matter, whereby they firmly cohere, and are consolidated so close together, that they will not yield to the touch. And the nearer the figure of these particles approaches to the five regular bodies, the stronger will be the attraction, and the greater their cohesion, and the firmity or hardness of the body thence arising. Hardness.

Softness is such a texture of bodies, when they yield to the impression of the finger, and this in various degrees, the lowest of which is liquidity. Softness.

Rigidity or stiffness, and flexibility or pliability in bodies, do likewise depend on the size, shape, and peculiar texture of the particles or corpuscles of bodies, of which little certain can be said. Rigidity.

Fixity or consistence is a quality of bodies, whereby their particles do naturally keep the same position to each other, and are not to be moved or separated from one another but by some coercive external force. This also results from the figure, attraction, contact, &c. of the constituent particles. Fixity.

Fluidity is that state of bodies, by which their particles are always in a flow, and are disposed to move indifferently in any direction upon the least impression. This proceeds from the exceeding smallness, roundness and lubricity of the constituent particles thereof; as of fire, water, &c. Fluids and liquids differ in this, that the latter wet or stick to

to the finger or part which touches it, whereas the former doth not; as sand, &c. is a fluid, but not a liquid.

Heat and cold. Heat and cold are the most general and obvious qualities in bodies. The former consists in a great agitation, and violent intestine motion of the particles of hot bodies, which acting on us, excites that idea in our minds. On the contrary, cold proceeds from the inactivity and motionless state of the particles of cold bodies. Heat may arise from such a degree in bodies, as to render the particles luminous and fluid, which is called a flame of fire; and cold may be augmented so far as to render fluid bodies fixed and solid, which is called congelation or freezing; thus water we see is congealed or frozen into ice.

Humidity. Humidity arises from a mixture of liquid particles with those of a fixed nature in bodies. And thus by exhaling and evaporating this quantity of liquid matter from bodies, their moisture ceaseth, and they are said to be dry, or in a state of siccity, which is deficient of all liquid particles.

Elasticity. Elasticity is that which we vulgarly call springiness in some bodies; by this quality they do, when bended or pressed, immediately return to their first figure or form of their own accord. This property is more or less in all bodies; but none are perfectly elastic, or which recover their figure with the same force they lost. The cause of elasticity depends on a special configuration, mode, and attraction of the parts of elastic bodies.

Odours. Odours of bodies are those exceeding fine and invisible parts which continually fly off the odoriferous body, and perfume the air around with smells and scents of various kinds; these effluvia (as they are called) arriving at our nostrils, affect the olfactory nerve, and thereby excite the ideas of odours and smells in our minds.

Sapours. Sapours or tastes are, in like manner, ideas raised in the mind by means of certain saporific particles in bodies affecting the nervous papillæ of the tongue, which are the organs of tastes.

OF URANOLOGY.

Uranology, or what I have elsewhere called Cosmology, is the second great part of Natural Philosophy, and is the doctrine of the heavens and ethereal regions above the atmosphere of air, in and through which the great and splendid bodies of the sun, the planets, the comets, and the stars, are seen to move, which there become the subject of this part of Physiology. Uranology then may be considered under the following branches, viz. (1.) Heliography, which treats of the sun. (2.) Selenography, which treats of the moon. (3.) Planetography, which treats of the planets. (4.) Cometography, which treats of the comets. (5.) Astrography, which treats of the fixed stars. Of which in their order.

Of uranology,
or cosmology.

Its parts.

Heliography is the philosophical doctrine of the sun, which is briefly summed up under the following articles. (1.) The sun is the center of a system of fix great bodies called planets, which continually move around him. (2.) The sun is the fountain of native light and heat, which is communicated from him to the planets. (3.) His diameter is computed to be 822148 English miles, and his solid content to be 290971000000000000 miles. (4.) The quantity of matter in his body is to that in the earth as 10000000 to 59. (5.) The weight of bodies on his surface to their weight here, as 10000 to 435. (6.) His density to that of the earth, as 1 to 4. (7.) On his surface appear certain dark spots called Maculæ Solares, which often change their place, number, and magnitude; but what they are is not known. (8.) If those spots are really in the sun's body, they prove him to have a motion about his axis in about twenty-five days and six hours, else he hath none. (9.) His daily motion from east to west is not real, but apparent, arising from the true motion of the earth on which we live.

Heliography,
or doctrine of
the sun.

Selenography hath for its subject a description of Selenography, or doctrine of the moon pertaining to our earth; for though there be other moons in the planetary system, yet they are not moon.

not considerable enough to be mentioned with this great (though secondary) luminary. In the moon then we observe, (1.) That her body is dark, uneven, spherical, and like to our earth in matter and form. (2.) That the bright parts are the more eminent and illumined parts of land, as mountains, islands, &c. (3.) The dark parts are thought to be seas, lakes, vales, &c. which reflect no light. (4.) It is said by some there is an atmosphere of air about her; and if so, then (5.) There is wind, clouds, rain, and all other meteors as here. (6.) And of consequence the moon is inhabited by rational, as well as various other animals. (7.) The diameter of the moon is about 2175 English miles, her circumference 6829, her superficies 14855440 square miles, and her solid content 5386333000 solid or cubic miles. (8.) The moon revolves about the earth, with a very irregular and elliptic motion, in about 27 D. 7 H. 43', at a mean rate, from west to east. (9.) The mean diurnal arch, described by the moon, is therefore $30^{\circ} 10'$ of the ecliptic. (10.) By this means she appears to rise and set each day about an hour later than another. (11.) According to the different position of the moon in her orb, with respect to the sun and earth, she puts on various aspects or phases, as new, horned or cornuted, bisected or dichotomized, gibbous and full. (12.) And since the moon never appears at the same distance from the sun of a different face, it is plain she must have a diurnal motion about her own axis, compleated in the very same time as her periodical or menstrual revolution about the earth is. (13.) So that the lunarians have their days and months of equal lengths.

Planetography, or doctrine of the planets.

Planetography is a description of the natural affections and phænomena of the planets. The principal of those which are common to all of them, are as here set down. (1.) They all revolve about the sun as the center of the system, viz. Mercury ☿, Venus ♀, the Earth ⊕, Mars ♂, Jupiter ♃, Saturn ♄; and in the order from the Sun as they are here named. (2.) The form of all their orbs is elliptical, some more than others. (3.) In their orbs they describe areas (by

(by a line drawn to the sun) proportional to the times.

(4.) Their velocity is always reciprocally as their distance from the sun, in any point of their orbs.

(5.) The attraction or action of the sun, at each of them, is reciprocally as the squares of the distances from the sun.

(6.) The real motion of them all is from west to east, though sometimes they appear to move from east to west; and sometimes they appear not to move at all: and thus they are said to be direct, retrograde, and stationary.

(7.) The Earth, Jupiter, and Saturn, are many times eclipsed by the interposition of their moons between the sun and themselves, which are sometimes partial, sometimes total, and sometimes central eclipses.

(8.) The orbit of the earth, or that in which the sun appears to move, is called the ecliptic, which is divided into twelve equal parts, called signs, viz. Aries, the ram ♈ ; Taurus, the bull ♉ ; Gemini, the twins ♊ ; Cancer, the crab ♋ ; Leo, the lion ♌ ; Virgo, the virgin ♍ ; Libra, the balance ♎ ; Scorpio, the scorpion ♏ ; Sagittarius, the archer ♐ ; Capricornus, the goat ♑ ; Aquarius, the waterer ♒ ; Piscis, the fish ♓ .

(9.) The orbs of the other planets are not in the plane of the ecliptic, but are differently inclined thereto in a certain angle.

(10.) The common intersection of those planes with the plane of the ecliptic is called the line of nodes; because,

(11.) The extremities of these lines in the ecliptic are called the nodes, where the planet ascends or descends below the plane of the ecliptic; the former is called the Dragon's Head Ω , and the other the Dragon's Tail ♊ .

(12.) The point in the orb, most distant from the sun, is called the Aphelium, and that nearest the Perihelium.

Besides these general things, the planets have each some peculiarities.

Saturn has a most surprising phenomenon, called Saturn's ring. his ring, which, like the annular border of a pewter dish, encompasses his body at the distance of 21000 miles, and its breadth is as much more.

Jupiter has the appearance of belts girding his body; Jupiter's belts. concerning which there are various conjectures, but nothing certainly known.

Jupiter, Mars, and Venus, are also observed to have dark spots on their disk.

The satellites of Jupiter and Saturn. The Earth, Jupiter, and Saturn, have a system of secondary planets, called the satellites or moons; the Earth 1, Jupiter 4, and Saturn 5, whose distances and periodical times are as here set down.

		D.	H.	M.					
Jupiter's	{ 1 Satellite	1	:	18	:	27	{ Distant in Semidia- meters of Jupiter	{ $5\frac{2}{3}$ 9 $14\frac{1}{3}$ $25\frac{1}{3}$	} from his center.
	{ 2 ———	3	:	13	:	13			
	{ 3 ———	7	:	3	:	42			
	{ 4 ———	16	:	16	:	32			
Saturn's	{ 1 Satellite	1	:	21	:	18	{ Distant in Semidia- meters of Saturn's ring	{ $1\frac{9}{10}$ $2\frac{2}{3}$ $3\frac{2}{5}$ 8 $23\frac{3}{10}$	} from Saturn's center.
	{ 2 ———	2	:	17	:	41			
	{ 3 ———	4	:	12	:	25			
	{ 4 ———	15	:	22	:	41			
	{ 5 ———	79	:	22	:	4			

A Synopsis of the chief Properties of the PLANETS.

Titles.	Mercury	Venus	Earth	Mars	Jupiter	Saturn
Greatest Apparent Diameter.	1° 11' 48"	1° 5' 58"	32' 47" Sun	1° 20' 50"	1° 24' 12"	1° 19' 40"
Least Apparent Diameter.	1° 4' 4"	1° 9' 34"	31' 40" Sun	1° 2' 46"	1° 14' 36"	1° 14' 11"
Proportion of Diameters to the Sun's 1000.	4	12	12	6	181	137
Diameters in Miles.	2460	7906	7964	4444	81155	67870
Mean Dist. from the Sun	38710	72333	100000	152369	520110	953800
The same in Miles.	32000000	59000000	81000000	123000000	424000000	777000000
Daily mean Motions in their Orbits.	0° 1' 11"	0° 1' 11"	0° 1' 11"	0° 1' 11"	0° 1' 11"	0° 1' 11"
Their Periodical Revolutions.	D. H. M. 87 23 16	D. H. M. 224 16 49	D. H. M. 365 6 9	D. H. M. 686 23 27	D. H. M. 4332 12 20	D. H. M. 10759 6 36
Their Diurnal Revolutions.	* * *	0° 23' 0"	0° 23' 56"	1° 0' 40"	0° 9' 56"	* *
Excentricities.	7970	517	1690	14100	25050	54700
Place of the Aphelium.	♈ 13 7 54	♈ 4 19 54	♈ 8 1 10	♈ 0 31 54	♈ 9 9 54	♈ 27 49 54
Place of the Node Ω.	♈ 15 1 54	♈ 14 25 54	* * *	♈ 18 29 54	♈ 7 19 54	♈ 21 49 54
Inclination of the Orb.	6 54 0	3 24 0	* * *	1 52 0	1 20 0	2 30 0
Proport of Light and Heat.	700*	200	100	40	37	11
Moons attending them.	*	*	1	*	4	5

Cometography, or doctrine of the comets.

Cometography is the doctrine of comets or blazing stars; their bodies are said to be solid, compact, fixed, and durable substances; they are but a different kind of planets, and move about the sun in orbs vastly elliptical and excentric, some more so than others; and therefore their periodical revolutions are very great for the most part, the least we know being $75\frac{1}{2}$ years. There are three sorts of comets: (1.) Cometa Crinita, having a tail like that of an horse. (2.) Cometa Barbata, having a tail like a beard. (3.) Cometa Ensisformis, having a tail like a sword. The tails of comets are supposed to be owing to some unctuous matter of their bodies, which by the sun is prodigiously heated and rarified, and made to fly off in a fiery blazing vapour, growing still wider and thinner towards its extremity; their bodies are discovered to have an atmosphere about them; and these are the principal matters yet known of comets, which are related here.

Astrography, of the stars.

Astrography describeth the fixed stars, whose chief phænomena are, (1.) That they are infinite in number, at least innumerable, considered all together. (2.) The number of visible ones is not great, being not above 400 or 500 in a dark clear night. (3.) These, together with all that can be discovered by a telescope, are not above 3000. (4.) They all shine with their native and proper light, and appear as points only on account of their immense distances. (5.) They are therefore supposed very reasonably to be so many suns, each having a system of planets and comets about him like our sun. (6.) Some new stars appear, and other stars have disappeared or been extinguished, which are by some reckoned to have been the planets or comets belonging to some of the nearest fixed stars or suns. (7.) The galaxy or milky way is produced by the united lustre of an infinite number of invisible stars in that region. (8.) The fixed stars have a slow motion about the poles of the ecliptic performed in 25920 years, which space is called the Platonic or Great year; after the expiration of which the stars and all sublunary things return again to their first state and places.

Platonic year.

OF AEROLOGY.

Aerology is a physiological description of the atmosphere or body of air environing the earth on every part, and of all the meteors in and produced by it. This part is therefore divided into the following branches. (1.) Aerography, which treats of the atmosphere, or air in general. (2.) Anemography, which treats of the winds. (3.) Meteorography, which treats of the meteors, and other celestial phenomena.

Aerography describes the nature, properties, and various affections of the atmosphere or air, which are reducible to the following heads. (1.) The atmosphere is that huge body or shell of air, which incloses the earth all around, and extends to a considerable height, viz. about 40 or 45 miles. (2.) The density of the air gradually decreases as its height increases. (3.) The particles of air are so very fine, and of such a nature, as to render the whole body of air pellucid or diaphanous to that degree as to be invisible. (4.) The air is also fluid, but not congealable like water. (5.) It is capable of being rarified and condensed to a very great degree. (6.) It is very elastic, or endued with an elastic power or force. (7.) The weight of the air is very great, no less than 2000th on every square foot of the earth's surface. (8.) From the pressure of which the Mercury rises in the barometer, the water in the pump, &c. (9.) It is the medium of all sound; for a bell struck in an exhausted receiver cannot be heard. (10.) It is the medium which diffuses light; so, were there no atmosphere to refract the sun's rays all around, the heavens would appear as dark in the day-time as at night; and the sun, moon, and stars, only would appear visible. (11.) It is the means of life, inasmuch as by its pressure and elasticity it rushes into and distends the lungs, and keeps them playing in inspiration and expiration. (12.) It communicates a vital principle or spirit to animals, which the fire destroys; for no creature can live in adust or burnt air, or such as have passed through the fire. (13.) It is necessary for vegetation; for plants and trees respire the

Of aerology,
and its parts.

Aerography,
or doctrine
of the at-
mosphere.

**Anemogra-
phy, or doc-
trine of the
wind.**

the air, on which their vegetative life depends. (14.) It is an universal menstruum, which dissolves all bodies in time, and reduces their substances to new forms; as iron into rust, copper into verdigrease, &c.

Anemography is the physiological doctrine of the wind. (1.) The wind is nothing but a stream or current of air, as a river is of water. (2.) Any thing which destroys or disturbs the equilibrium of the air may be the cause of wind; as heat, eruptions of vapours, rarefactions and condensations, fall of rains, pressure of the clouds, &c. (3.) The winds have various qualities; some being violent, others gentle; some hot, others cold; some constant, others mutable; some moisten and dissolve, others dry and thicken; some raise rain, others disperse it; some intermittent and unequal, others serene and smooth, &c. (4.) Some winds blow constantly from one quarter, and are called general trade-winds; as on each side the equator to near 30 degrees latitude, in the Atlantic, Ethiopic, and Pacific oceans: which proceeds from the sun's rarifying the air over those parts, and the flowing in of the denser air from the distant parts of each hemisphere. (5.) Some winds blow only one half or one quarter of the year one way, and then the contrary, which are called monsoons, or periodical trade-winds; these are found in the Arabian, Indian, and Chinese seas; for the cause whereof see the Philosophical Grammar. (6.) The velocity of wind is at the rate of 50 or 60 miles in a great storm, and a common brisk wind about 15 miles an hour; and some move not one mile an hour. (7.) The use of the wind is very great, in cooling and cleansing the air from all poisonous contagions, and pestilential exhalations; and thereby keeping it pure and healthful. The winds also carry the clouds, and distribute the rains to the several parts of the earth; with many other excellent uses.

**Meteorogra-
phy.**

Meteorography is a description of the meteors of the air; as vapours, clouds, rain, thunder, &c. which here follow in order.

Vapours.

Vapours, from which most meteors proceed, are a body of aqueous particles some-how separated from the surface of the water, or moist earth, by the action of the sun's heat, and are so small as to be specifically lighter

lighter than air, into which therefore they rise and float, and form the clouds.

Mists and fogs are a commixture of vapours and exhalations; the latter as they visibly arise and ascend from particular places, as rivers, lakes, fens, marshes, &c. and the former as they descend and fill the air, and render it more opaque than usual. Mists and fogs

Clouds are nothing else but misty vapours suspended aloft in the air, and soaring on the wings of the wind. These, when by the agitation of winds, the sides of mountains, or any other means, they are driven together, and condensed into yet thicker and darker clouds, become specifically heavier than air, and descend in drops of rain. Clouds.

Snow is occasioned from particles of vapours frozen into icicles in the cold regions of the higher air, which being heavier than air, fall down, and in their descent several of them striking together, coalesce, and form fleeces of snow. Rain.
Snow.

Hail proceeds from drops of rain congealed into ice by nitrous particles which they meet with in their descent through the inferior air. Hail.

Ice and freezing are supposed to be the effects of nitrous particles, which being sharp and pointed, insinuate themselves into the pores of water, dew, &c. and do thereby fix, crystalize, and harden the superficies thereof into those substances which we call ice, frosts, &c. Ice and freezing.

Thunder proceeds from an heterogeneous commixture of the effluvia or exhalations of sulphureous, nitrous, and inflammable bodies in the air, which ferment, kindle into flames, and make horrible explosions (like gun-powder) which we call thunder and lightning. Thunder and lightning.

The Aurora Borealis, or northern lights, are produced also from nitro-sulphureous vapours, which are thinly spread through the atmosphere higher than the clouds, and by fermentation take fire, and the explosion of one portion kindling the next, the flashes succeed one another till all the vapour within their reach is set on fire, the streams whereof will appear to converge towards the zenith of the spectator, or the point over our heads. Aurora Borealis.

The

Ignis fatuus.

The Ignis Fatuus, or jack-with-a-lantern, is supposed to be nothing but a fat, unctuous and sulphureous vapour, which appears lucid, and is wafted about by the air, near the earth's surface, like a light in a lantern. Such like vapours kindling in the serene air in the night, appear like falling stars, and are therefore so called.

The rainbow.

The Rainbow, one of the finest of the phænomena of nature, exists in falling rain or dew, and is produced by reflection and refraction of the sun's rays in the aqueous particles; the manner whereof, and the wonderful properties of the bow, too large and many to be here explained, may be seen in my Philosophical Grammar.

Halo's.

Halo's are those circles which are seen sometimes to encompass the sun and moon, and are often variously coloured; they always appear in a rimy or frosty sky, and proceed from the refraction only of the light in the hail-stones in the air. The diameter is generally about 45 or 46 degrees.

G E O L O G Y.

**Of geology
and its parts.**

Geology is a physiological description of the teraqueous globe, so called as consisting of land and water. This branch of philosophy is divided into two others, viz. (1.) Geography, which treats of the dry land, and (2.) Hydrography, which treats of the watery parts of the globe, and the properties of water in general.

Geography.

Geography is again subdivided into (1.) Geography especially so called, which treats of the surface of the land, and all its particulars. (2.) Mineralogy, which treats of fossils, minerals, earths, &c. in the bowels of the earth. (3.) Phytology, which treats of the nature of vegetables; and (4.) Zoology, which treats of the various kinds of animals.

Hydrography

Hydrography also considers (1.) The sea, its figure, tides, saltness, extent, &c. (2.) The doctrine of fountains, rivers, lakes, &c. Of all which in order.

Special

Special geography has been discoursed of, as a particular science; I shall therefore pass to

Mineralogy, which treats of subjects dug up out of the bowels of the earth, which may be reduced to these seven heads. (1.) Earths. (2.) Ores. (3.) Fossils. (4.) Minerals. (5.) Metals. (6.) Stones. (7.) Exuviae, and other extraneous bodies.

Earths include all those softer earthy substances we call clay, loam, marle, sand; and the boles or earths, as the Terra Japonica, Lemnia, Armenja, &c. all which result from the various and different degree, mixture, and modification of the universal properties and specific qualities of the constituent particles of the matter whereof they consist.

Ores are those kinds of earth which are dug out of mines, containing great quantities of metallic particles, and from which metals are extracted; as gold ore, silver ore, &c.

Fossils are, properly speaking, all bodies dug out of the earth; concerning which, see the Fossil Kingdom under the title Chemistry, and the Philosophical Grammar.

Minerals are all such fossil bodies as are not inflammable, ductile, or fusible; but are hard, brittle, and may be reduced to powder, or calcined by fire. They are sometimes called semi-metals, as being of a middle nature between stones and metals; the principal of these are marcasite or bismuth, antimony, cinabar, chalk, coal, &c. to which some add mercury or quicksilver.

Metals are simple fossil bodies, that fuse or become fluid by fire; and by cold coagulate and harden into a solid mass; and lastly, are malleable or ductile under the hammer. The bodies to which this definition belongs in every part, are but six, viz. (1.) Gold, which is the heaviest, most ductile, malleable, fixed and pure, of all bodies; it is easier fused than iron or copper; is dissolvable in no menstruum but aqua regia; and is found sometimes in glebes or ore, and sometimes in pure dust or grains at the bottom of some rivers in Guinea, &c. (2.) Silver is next to gold in purity, fixity, ductility or malleability; is more difficult of fusion than gold or lead; is dissolvable in aqua-

Copper.

Iron.

Tin.

Lead.

Mercury.

Stones.

Vulgar.

Precious.

aqua-fortis, but not in aqua-regia; it is seldom found pure, most often in a kind of stony black glebe in the mines of Peru and Chili. (3.) Copper; it is next to silver in weight, is very ductile when pure; its fixity is greater than that of lead or tin; it is dissoluble by all salt menstrooms yet known: if it be dissolved in an acid one, it turns green; if in an alkaline, red; and in others, blue. It is the most elastic and sonorous of all metals. The richest copper ore is in the mines of Hungary. (4.) Iron; this metal is compounded of a vitriolic salt, sulphur, and earth, ill digested together. It is the least ductile, the hardest and most brittle of all metals. It ignifies long before it fuses. It is dissoluble by all menstrooms. It is the only metal subject to the magnetic power, and has a kind of magnetic virtue in itself. It is every where found in mines, in a stony glebe, like a loadstone. (5.) Tin; this is the lightest of all metals, and the softest, except lead. It has the least fixity in fire; is easily fusible, and that long before ignition. It is easily miscible with other metals, and greatly increases their sound and elasticity. It is chiefly dug in Cornwall, and its glebe or ore is a heavy spongy stone. (6.) Lead; this is next to gold in weight, but the softest and most flexible of all metals; as also the most fusible, least sonorous and elastic of all others. It is sometimes found pure, but oftener in mineral ore, which is a sort of blackish fat earth difficult to fuse.

Mercury is by some reckoned among the metals; it is the heaviest of all bodies but gold. It is the most fluid body in nature, and therefore divisible into the minutest particles. It is found capable of the greatest degree of cold and heat, but is yet incapable of congelation or freezing. It enters the pores of almost all bodies, and dissolves in most acids. It is next to gold in purity, and is extremely volatile. It is found in mines; and sometimes pure, running in veins and streams about the mine, and is then called virgin mercury.

Stones make the next class; these are commonly distributed into vulgar and precious stones; of the first sort are marble, flint, free-stone, pumice-stone, talc, chalk, common-stones, pebbles, &c. Precious stones, which

which are called gems or jewels, are of divers distinctions, some being transparent, as the adamant or diamond, crystal, and beryl: some are variously coloured, and brilliant; as the carbuncle, jacinth, chrysolite, smaragdus, topaz, amethyst, achate, jasper, ruby, garnet, onyx, sardonyx, sapphire, and a few others of less note. Of all which see an account in the Philosophical Grammar.

Exuviae, which make the last head of Mineralogy, are all those shells and parts of animals which are often found in the bowels of the earth; as the echini, glossopetræ, cockles, oystershells, turbens, scallops, bones, &c. petrified, or preserved from corruption through ages past, and very probably most of them from the flood, when the exuviae of marine, &c. animals were by the general inundation brought upon and mixed with the superior part of the earth, and which in time hardened into the substance of stone.

Phytology; this will be the subject of an entire discourse under the title of Botany, next following; which therefore see.

Zoology is that part of general geography which treats of the nature, kinds, and species of animals.

An animal is an organized body, endued with the powers of sensation and thought, and of voluntary local motion. This is the most exalted kind of all terrestrial beings, and in which there are many gradations, which are the subjects of as many branches or subdivisions of zoology; and these are as follow:

- (1.) Anthropography, which treats of the nature and parts of the human body, and is the proper subject of Anatomy, which see.
- (2.) Zoography in particular, which treats of the nature of beasts or brutes; as horses, kine, sheep, &c.
- (3.) Ornithography, which treats of the nature of birds or fowl.
- (4.) Ichthyography, or the doctrine of fishes, which considers their nature, kinds, and parts.
- (5.) Entomatography treats of insects, which are (*quasi insectæ*) as it were cut asunder, and the two parts joined by a small thread or neck; as in ants, flies, bees, &c.
- (6.) Herpetography, or the doctrine of reptiles, or that tribe of creatures which move with a sinuous, vermicular, or creeping motion, and neither walk nor leap, as do the other

Exuviae.

Phytology.

Zoology.

An animal defined.

The parts of zoology.

other species above-mentioned; such as worms, snails, caterpillars, &c. (7.) Zoophytography treats of such creatures as are a kind of medium between vegetables and perfect animals, or partake of both in some measure; as all shell-animals: as oysters, cockles, snails, &c. which resemble a plant in being fixed to some other body, viz. their shell; and an animal, as having sense, thought and motion. Concerning all these the reader may see a short survey in the Philosophical Grammar, or consult the larger works of naturalists.

Of Hydrography.

The sea.

Its figure.

Extent.

Depth.

Saltnefs.

Tides.

Spring and neap tides.

How we have two tides each day.

Hydrography delivers the doctrine of the sea, and all kinds of waters. In the sea we consider, (1.) Its figure, which, since the earth is known to be of a round or globular figure, must needs be convex or spherical likewise, according to the known laws of fluids; which also is demonstrated by sailing on its surface. (2.) Its extent, or quantity of surface. It is impossible nicely to determine this; but it is well known to be above two-thirds of the surface of the whole earth. (3.) The depth thereof; this is various in different parts, being in some places unfathomable, in others $\frac{1}{2}$, $\frac{1}{3}$, $\frac{4}{10}$, $\frac{1}{10}$, $\frac{2}{10}$, $4\frac{1}{2}$ English miles deep; whence it appears that the depths of the sea bear some proportion to the height of mountains on the earth. (4.) Its salt; this is supposed to arise from the vast rocks, mountains, and mines of salt dispersed over the bottom of the sea; which being continually diluted, is as constantly mixing with its waters; which therefore can never lose their salt quality. (5.) The tide, or flux and reflux, called the flowing and ebbing of the sea: this is known to arise from the attraction of the moon principally; sometimes the attraction of the sun contributes thereto, as in conjunctions and oppositions, and then the tides of course rise higher, and are called the spring-tides. On the contrary, in the quadratures the moon's attraction is diminished by the sun's, and then the tides flow lower, and are called the neap-tides.

The waters perpendicularly under the moon are in the upper hemisphere most attracted, in the lower one the least attracted of all other parts of the sea's surface; and therefore in both cases the water will become lightest in these places, and consequently will there

ramify

tumify and rise highest; and so occasion two tides opposite to each other; which will successively pass any meridian at the distance of twelve hours time.

The forces of the moon's and sun's attraction are to each other as 51 to 10; the sum and difference of these numbers are 61 and 41, and therefore the spring-tides caused by the sun will be to the neap-tides, caused by the difference of these forces, as 61 to 41, or as 6 to 4; that is, the former are one third part greater than the latter: or, if the sun can raise one foot eleven inches, the moon will raise it nine feet seven inches; and both together in the spring-tides about eleven feet and a half, but in neap-tides only about seven feet and a half. And so much for a general notion of the tide, which admits of great variety and exceptions.

The difference of spring and neap-tides.

Springs or fountains are the next things to be considered. They are generally reckoned of two sorts, viz. (1.) Temporary, which run only for a time, or in winter, and dry up in the summer. These arise from great rains, which falling on the higher parts of land, enter the crevices of the earth, and run through various subterranean veins and channels, till they find vent in the surface of some lower part, where they bubble up and issue forth in streams. (2.) Perennial, which constantly run all the year round. These are supposed to derive their waters from the ocean, by ducts, and hollow winding passages through the bowels of the earth to various parts of its superficies, where they burst forth as do the others: though many will have it that all springs have their waters, if not wholly, yet principally from rain. But so great is the controversy about these things, that I shall say no more of it here.

Of springs.

Temporary.

Perennial.

Rivers are said to owe their original to many causes; Rivers and as (1.) Great springs gushing out of the earth in large streams and torrents, which force their way through the country to the ocean. (2.) The several lesser streams from divers springs uniting, form a larger; and the confluence of several of these larger brooks or streams make one great current or river. (3.) Vast defluxions of rain, melted snow, condensed vapours, &c.

Z

&c.

&c. from the sides of high mountains, tear up the earth, and form channels for the largest rivers in the world, as the Danube, the Po, &c.

Lakes whence

Lakes are those collections of waters, which are stagnant in the cavities of the earth's surface. Of these, some have their rivers which discharge themselves therein; some proceed from rain and snows which fill those hollows. Others are nourished by various springs rising therein: and lastly, others have a communication with, and receive their waters from the sea; which is manifest in salt lakes, as that of Haerlem, &c. Those lakes send out large rivers, which are supplied with subterranean streams and fountains: and those which receive large rivers, and send out none, must have what is more than sufficient to fill them conveyed from them by conduits under ground.



OF BOTANY.

BOTANY (or Phytology) is a science which hath for its subject herbs, plants or vegetables, of all kinds; the word Botany being derived from the Greek word Botane, which signifies an herb in that tongue. Hence a treatise on this subject is called Botanology. The book which gives an alphabetical account of the names, nature, and uses of plants, is called an Herbal; and a person well skilled in this science is called a botanist, herbalist, or simpler.

Botany or phytology defined.

A treatise of Botany should contain four great parts, viz. (1.) A general theory of vegetation, explaining, from the principles of reason and experiments, the nature and manner of the life and growth of plants and vegetables. (2.) A just and orderly distribution of herbs and plants into their several general kinds, and a particular enumeration of the species and individuals contained in each. (3.) A division of plants into their natural component parts, as roots, stalks or trunks, branches, leaves, flowers, fruit, &c. with observations on the variety and differences of each part, in the various kinds of plants. (4.) A declaration of the various affections of plants and vegetables, as their place of growth, time of blooming, their several qualities and uses in medicine, and other affairs of life. This latter part is the subject of an herbal, and so cannot be expected here at large. I shall give the best account of all these particulars that I can come at, and shall begin with the definition of a vegetable.

The great parts of this science.

A vegetable is a body organically formed, adhering to some other body by some part of itself; by which part it attracts and receives the matter of nutrition and increase, which is called vegetable life. Such are all plants, shrubs, and trees.

A vegetable, what.

Vegetation
defined.

Vegetation is the way of growth, or increase of bulk, parts and dimensions, by means of a proper disposition of organical parts or instruments receiving nourishment or nutritious juices, and which thereby circulates through all the substance of the vegetable, and is the immediate cause or principle of vegetative life.

Theory of
vegetation.

In a perfect theory of vegetation, therefore, we must have regard to three things: (1.) The original or genesis of a vegetable substance or plant: (2.) The mechanism, or organical disposition of parts necessary to vegetative life. (3.) Then what the vegetative principle is, or what those nutritious juices are by which the vegetable is made to grow and increase in bulk.

Of the original or genesis
of a plant.

By the original or genesis of a vegetable, is not here understood the common generation or propagation thereof by seed; but what that is in the seed which primarily gives form and essence to the plant, or how it comes to be or appear what it is. On this head the learned say much; and all, of late, agree that God, when he created the various kinds of vegetables, did even then also create and form every individual future plant belonging to every sort or kind, and included them in proper cases or seeds one within another: so that the original seed did really and formally contain in it all the future plants of its kind in inconceivable smallness or miniature: and therefore when any seed is planted, we are not to expect the production or creation of a plant which was not before in being, but only that the embryo plant hath, by this means, a power to vegetate, or to unfold and unravel its parts, to burst its matrix seed, to become visible, and to increase its bulk to its appointed dimension.

How evinced
and established.

This doctrine of the generation of plants seems to be intimated by Moses, when he says, "And God said, Let the earth bring forth grass, the herb yielding seed, and the fruit tree yielding fruit after its kind, whose seed is in itself upon the earth." But it is abundantly confirmed by microscopic observations and reasoning thereon; for not only all sorts of grain and fruit

fruit appear in due form and proportion of parts, by the microscope, even in the bud, before the blossom is seen, but even in the very seed, while yet on the plant, by help of the microscope, the plant of the next year may be seen. For instance: take a full-ripe bean, and view the germen with this glass, and you will plainly perceive it to be nothing but the stalk, leaves, &c. of the next year's plant in miniature. If therefore the plant of this year produces seed, and in that seed we descry the plant of the next year already formed, it is reasonable to suppose the seed of that small plant also contains another to be disclosed the second year, and that another for the third year, and so on *ad infinitum*, or to the end of things.

The modern philosophers have not only established a new theory of the generation of vegetables, but have moreover found that there is really such a thing as sex in plants, as well as in animal nature. And hence the distinction of male and female, as well as hermaphrodite plants, is become very familiar: for the vegetable females require impregnation by the male vegetables, in order to generation, as much as animals; nor will the seed produced by female plants, if sown, grow without it, any more than eggs will produce chickens, which were laid by an hen not trod by the cock: but since the parts serving to generation in vegetables are indeed the flowers, notwithstanding they are so beautiful, so gay, and much admired; I shall have occasion to say more of this matter when I come to treat of that part of a plant.

The next thing to be considered in vegetation, is the mechanism or system of organs or vessels in a plant, by which a circulation of alimentary juices is carried on through the plant, and its vegetation effected. In order to this there are found to be two series or orders of vessels in vegetables. (1.) Such as receive and convey the alimental juices from the root to all the parts of the plant. These answer to the arteries, lacteals and veins, in animals. (2.) Tracheæ or air-vessels, which are long hollow pipes, wherein air is continually received and expelled, i. e. inspired and expired. Within these air-pipes, Malpighi

The sex of plants a new discovery.

The structure of plants.

Their vessels.

(the discoverer of this vegetable mechanism) shews all the former series of vessels are contained.

The effect of heat on vegetables.

Hence it appears that the heat of a year, a day, yea single hour or minute, must have an effect on the air included in these tracheæ, i. e. must rarify it, and consequently dilate the tracheæ; whence arises a perpetual spring or source of action to promote the circulation in plants: for by the expansion of the tracheæ, the vessels containing the juices are pressed, and by that means the juices contained are propelled and accelerated, and also comminuted and rendered more and more subtile, and so enabled to enter vessels still finer and finer; the thicker part of it being at the same time secreted and deposited into the lateral cells or vesicles of the bark, to defend the plant from cold, and other external injuries.

Of the sap.

The juice (or what is vulgarly called the sap) having thus gone its stage from the root to the remotest branches, and having, in every part of its progress, deposited something both for aliment and for defence, what is redundant passes out into the bark, the vessels whereof are inosculated with those wherein the sap mounted; and through these it re-descends to the root, and thence to the earth again; and thus a circulation is effected.

The vegetative principle, what.

The third and last part of the theory of vegetation, is a true knowledge of the vegetative principle, or that which is the immediate matter of the growth or increase of the plant. It is certain this is a juice furnished by the earth, and imbibed by the absorbent vessels in the roots of the plant; this is circulated through the substance of the plant, and, in part, is assimilated thereto: and thus by the constant addition of new matter in every circulation, the plant is made to grow or increase its bulk. But more particularly,

This nutritious juice is imbibed from the earth, and therefore must contain some fossil parts, other parts derived from air and rain, and others from putrified plants, animals, &c. and consequently in vegetables are contained all kinds of salts, oil, water, earth, &c. if not mineral particles too. This juice enters the root in form of a fine and subtile water.

In the root then it is earthy, watery, acid, poor, and scarce oleaginous at all. In the trunk and branches it is further prepared, though it still continues acid. In the gems or buds it is more concocted, and, entering the vessels of the leaves, causes them to unfold and shew themselves. From hence it proceeds to the leaves of the flower, where it is still further digested; these transmitted to a greater degree of fineness to the stamina; these again to the farina or dust in the apices, where, having undergone a further maturation, it is shed into the pistil or style, which receives it in the manner of a womb, where it acquires its last perfection, fecundates the seed, and gives rise to a new plant.

The state of the sap in its different stages of circulation.

The sap in plants performs the same office as the blood in animals, viz. to be a vehicle to convey the food or aliment to the several parts of the vegetable by circulation. This vegetable aliment is (according to Dr. Woodward) a certain terrestrial matter contained in all water, and is of two kinds, viz. the one properly a vegetable matter, the other of a mineral nature. The former of these is principally the matter by which the vegetable is nourished. That this is more than probable, and that the plant owes little or nothing of its growth to earth or water, is made evident by divers experiments.

The office of the sap.

Thus Mr. Boyle raised a plant of 3lb. and after that another of 14lb. was produced from a quantity of earth watered with rain or spring water, and which being carefully weighed dry at first and last, was found to have lost scarce any thing of its weight.

Earth and water conduce but little to the vegetable aliment, shewn by experiments.

Again: Van Helmont dried 200lb. of earth, and therein planted a willow weighing 5lb. which he watered with rain or distilled water only; and after five years he weighed the tree, with the leaves it had borne in the time, and found the weight thereof to be 169lb. 3 oz. but that the earth had lost only 2 oz. of its weight; so that the increase of the plant was 13113½ times more than the expence of earth, and consequently earth has but a small share in vegetation.

That water likewise conduces but little thereto, is evident from Dr. Woodward's experiments. He

took

took a plant of common spear-mint which weighed 27 grains, and placed it in a vial of water for the space of 77 days; in which time it drank up 2558 grains of spring water, and then being taken out, weighed 42 grains; so that its whole increase was but 15 grains, which was but 107th part of the water expended.

He took another plant, weighing 127 grains, placed it in water for 56 days, when it weighed 255 grains, and the water expended was 14190 grains, which was 110 times more than the increase of the plant. From these, and many other experiments, 'tis plain that water also has but a small share in vegetation, and that therefore it must proceed from a peculiar vegetable matter in water, and the moisture of the earth, as before observed.

Of the perspiration of plants.

Since then it appears that plants imbibe such great quantities of water or humour, and retain so little for nourishment and growth, it follows, that there must necessarily be a considerable perspiration in vegetables as well as in animals, for the discharge and evacuation of all the superfluous moisture in each circulation. Accordingly, it has been found by experience, that a plant of about 3lb. will perspire 30 oz. in 12 hours day in July, but in a warm night not above 3 oz. and nothing in a cold night: and also that such a plant, if the leaves were plucked off, would not perspire above 1 oz. in 12 hours day, which plainly shews, that the leaves are the great organs of perspiration, and therefore may be called the lungs of the plant. Thus much for the vegetation of plants, the theory whereof is not yet arrived to its due perfection.

Of the second great part of Botany.

The distribution of plants.

The second great province of botany is to make a just and natural distribution and arrangement of vegetables into the several genus's or kinds and classes, and to enumerate the species and individuals contained in each. To effect this, many persons have pursued many and different methods: for since the kinds of plants follow some general differences or characteristics, and these being to be found in almost all parts of plants, therefore some have begun to define the various kinds of plants from their roots, others from the

the flowers, and others from the fruit, &c. But in this affair none has succeeded so happily as the great Mr. Ray, whom I shall here abridge; but shall first premise a word or two concerning the more common and general distinction of plants and vegetables.

First, then, with respect to place or country, plants are distinguished into (1.) Indigenous, or such as are natives of our own soil or country; and (2.) Exotics, such as are brought from foreign countries; as aloes, euphorbium, &c. With regard to sex they are divided into male, female, and hermaphrodite plants, as before observed. With regard to the time of their continuance, or period of life, they are distinguished into annual, or such as live but one year, or come up in the spring and perish in the winter; and perennial, or such whose roots endure many years. Again, those plants which retain their leaves in winter, are called evergreens, and such as do not are called deciduous, or perdisols. Also vegetables have been divided into herbs, shrubs, and trees; but this is rather popular and vulgar, than just and philosophical. Lastly, with respect to the element they live in, plants are divided into terrestrial, or land-plants; aquatic, or water-plants; and amphibious, or such as live indifferently in land or water.

But Mr. Ray is much more minute and nice in his celebrated distribution of plants into 25 genders or classes, which are as follow.

I. Submarine plants, or which grow in the sea, on rocks, &c. and seem to want both flower and seed: as corals, sponges, alga, &c.

II. The fungi, tubera terræ, or mushrooms, puffballs, and those excrescences of trees called jew's-ear, agaric, &c. all which appear to want both flower, and seed, and leaves; and have a vegetation peculiar to themselves.

III. Mosses of all sorts, most of which appear to want flower and seed; for which reason these three genus's are by Mr. Ray called imperfect plants.

IV. Capillary plants, which are all such as want a stalk, or consist of mere leaves, and whose seed grows like small dust on the back part of the leaves; as maiden-hair, spleenwort, polypody, fern, &c.

V. Plants

Indigenous plants.
Exotics.

Male, &c.

Annual.
Perennial.

Evergreens.
Perdisols.

Terrestrial.
Aquatic.
Amphibious,

Mr. Ray's distribution.

Submarine.

Fungous.

Mosses.

Capillaries.

- Apetalous.** V. Plants which bear apetalous or staminate flowers, i. e. such as consist only of stamina and the perianthum, without any leaves: as hops, hemp, nettles, docks, sorrel, arsefmart, lady's-mantle, &c.
- Lactiferous.** VI. Plants which have a compound flower, and which emit a sort of white juice or milk, when their stalks or branches are cut or broken off: as lettuce, fow-thistle, dandelion, succory, goat's-beard, nipple-wort, &c.
- Discoide.** VII. Plants which have a compound flower of a discoide figure, and the seed pappose, or winged with down, but emit no milk: as colt's-foot, fleabane, golden-rod, ragwort, groundsel, cudweed, &c.
- Corymbiferous.** VIII. The corymbiferous plants, which have a compound discous flower, but their seeds have no down. The name is taken from the form of its flowers, spread out like an umbrella; as corn, marygold, common ox-eye, yarrow, daisy, camomile, mugwort; and others a-kin to them; as scabious, teasel, eryngo's, &c.
- Capitated.** IX. The capitated plants, whose compound flower is composed of many small, long, fistulous flowers, whose calices being crowded thick together within a squammose or scaly coat, emulate an head or turgid knop on the top of the stalk: as in the thistle, burdock, blue-bottle, knap-weed, saw-worth. These also have a down adhering to their seeds.
- Monospermous.** X. Plants with a perfect flower, and having only one single seed belonging to each single flower: as valerian, corn-sallet, agrimony, burnet, meadow-rue, fumitory, &c.
- Umbelliferous** XI. The umbelliferous plants, which produce their flowers in an umbel on the top of the stalk or branch, resembling in some degree an umbrella. They have a pentapetalous flower, i. e. one of five leaves; and are gymnodispermous, i. e. have two naked seeds after each flower. Of this kind is parsnip, cow-weed, meadow-sweet, angelica, dropwort, hemlock, saxifrage, burnet, smallage, thorough-wax, fennel, &c.
- Stellated.** XII. The stellate plants, so called because their leaves grow on their stalks at certain intervals in form of a radiant star. The flowers are monopetalous, but

but divided into four segments, like little leaves. Each flower is succeeded by two small seeds at the bottom of it. Of this kind is mugwort, madder, lady's bedstraw, woodruff, clivers, &c.

XIII. The asperifoliate or rough leaved plants; *Asperifoliate*. they have their leaves growing alternately or irregularly on the stalks; their flower monopetalous, the edges of which, as well as of the calices, are divided into five parts, and after each flower usually succeed four seeds: as hound's-tongue, wild bugloss, comfrey, mouse-ear, &c.

XIV. The verticillate plants, whose leaves grow *Verticillated*. by pairs on the stalks; their flowers monopetalous, labiated, and in many galeated; to each flower succeed four seeds within the perianthum. The common characteristic of this tribe is, that the flowers grow in whirls about the stalk; though it agrees not to all the plants of this genus. To this class belong dead-nettle, horehound, mint, pennyroyal, vervain, motherwort, alehoof, bugle, betony, self-heal, &c.

XV. Polyspermous plants, or such as have many *Polyspermous* naked seeds succeeding the flower: as marsh-mallow, pilewort, crow's-foot, avens, strawberries, cinquefoil, tormentil, meadow-sweet, &c.

XVI. Pomiferous plants, which are all such as *Pomiferous*. bear large fruit covered with a thick rind; whose flowers are monopetalous, quinquepartite on the margin, and growing on the top of the fruit. Of this kind are all pompkins, gourds, citruls, melons, cucumbers, &c.

XVII. Bacciferous plants, or such as bear berries; *Bacciferous*. as briony, honeysuckles, butcher's-broom, Solomon's-seal, lilly of the valley, night-shade, asparagus, &c.

XVIII. Multifiliquous plants, or such as have after *Multifiliquous* each flower many distinct, long, slender, and sometimes curved cases (or filiquæ) in which the seed is contained, and which open and let it drop out when ripe: as housfleck, orpine, navel-wort, bear's-foot, marsh-marygold, columbines, &c.

XIX. Vasculiferous plants, with monopetalous *Vasculiferous*. flowers, either uniform or difform; and after each flower a peculiar case, or seed-vessel, (besides the calix;) and this often divided into many lesser cells
or

or locules, containing the seed. Of this sort are henbane, gentian, bindweed, throatwort, toad-flax, fox-glove, yellow and red rattle, eyebright, &c.

Siliquous.

XX. Plants which have an uniform tetrapetalous flower, but bear their seed in oblong siliquous cases or pods: as stock-gilliflower, wall-flower, jack by the hedge, mustard, charlock, raddish, wild rocket, lady's smock, scurvy-grass, woad, &c.

Leguminous.

XXI. Leguminous plants, or such as bear pulse; their flower papilionaceous, (i. e. in the form of a butterfly and its wings expanded) consisting of four parts, set together at the edges. These are vetches, lentils, peas, beans, liquorice, bird's-foot, trefoil, restharrow, &c.

Enangiospermous.

XXII. Enangiospermous or vasculiferous plants, with a pentapetalous flower, i. e. one of five leaves and a capsule or case containing the seed: as maiden pinks, champions, St. John's wort, male pimpernel, chickweed, crane-bill, primrose, flax, periwinkle, centory, &c.

Graminifoliate.

XXIII. Graminifoliate floriferous plants, with a tricapsular seed-case, and a bulbous or tuberous root, from the basis whereof shoot many fibres or strings, to keep it firm in the earth: as garlick, onions, daffodil, hyacinth, saffron, &c. To these are added also those plants whose roots approach to a bulbous form; as flower-de-lis, cuckow-point, orchis, broom-rape, tway-blade, winter-green, &c.

Culmiferous.

XXIV. Culmiferous plants, which are such as have a smooth, slender, long, hollow, jointed stalk, with one grassy sharp-pointed leaf, immediately encompassing the stalk at each joint. These bear an imperfect flower, and their seed is contained within a chaffy husk: as wheat, rye, oats, barley, and most kinds of grasses. Under this head Mr. Ray also places those with a grassy leaf, but not culmiferous: as cypress-grasses, rushes, cat's-tail, bur-reed, &c.

Anomalous.

XXV. Anomalous plants, or such as have no distinguishing generical character, or no certain place of growth, but chiefly in water: as water-lilly, water-millfoil, pepper-grass, mouse-tail, milk-wort, dodder, &c.

Each

Each of these kinds Mr. Ray divides into various species more or less, and then enumerates the several plants of each species, with their proper notes and characters whereby they are to be known. See his Method of Plants. This gentleman has also made a distribution of trees and shrubs into several kinds: as (1.) Coniferous, which bear fruit of a conical form; as fir, the pine, cedar, cypress, tree of life, &c. (2.) Juliferous, or such as bear the long pendant tufts called catkins, or catalins; as willows, hazels, walnut-trees, poplar, mulberry-trees, &c. (3.) Pomiferous, with umbilicated fruit, i. e. such as bear pretty large, round, juicy fruit, with an eye (as it is called) on the top; as apple-trees, pear-trees, quince-trees, medlars, &c. (4.) Bacciferous, with umbilicated juicy fruit like berries; as the gooseberry-tree, currant-tree, myrtle, elder, ivy, laurustinus, &c. (5.) Pruniferous, or which bear flowers adhering to the bottom of the fruit; the fruit itself of the plumb-kind, or with a stone in the middle, containing the seed or kernel: as the plumb-tree, cherry-tree, sloe-tree, peach, apricot, nectarine trees, with all others of the like sort. To these he adds several other anomalous genders, and such as are in part reverse to the foregoing; but it is not worth while to mention them here; nor yet his minute distribution of grasses, reeds, and rushes, into their proper classes and genders.

His distribu-
tion of trees.

Coniferous.

Juliferous.

Pomiferous.

Bacciferous.

Pruniferous.

The third great part of Botany makes a just and natural division of a plant into its component parts, with a description of the several affections, differences, and natural uses of each part with regard to the vegetable œconomy. Now the parts of which a perfect plant doth consist, are the root, stalk or stem, leaves, flower, fruit, and seed. Of these in their order.

Of the third
great part of
botany.

The root of a plant is that body by which it adheres to the earth or other body, and by which it naturally draws in the nutritious moisture which nourishes it. Roots differ very much both in their form and make: the most noted differences of roots are the following. (1.) A fibrous root, or that which consists wholly of small threads or fibres, as most sorts

The root of a
plant; of di-
vers sorts,

Fibrous.

of

- Tuberous.** of grafts, pinks, &c. (2.) A tuberous root, or that which consists of an uniform fleshy substance, and is of a roundish figure; as turnips, potatoes, &c. (3.)
- Bulbous.** A bulbous root; which is either tunicated, or covered with several coats involving one another, as onions, tulips, &c. or squamose, having several scales lying over one another; as lillies, crown-imperial, &c. (4.)
- Testiculated.** A testiculated root, or such as consists of two knobs, resembling a pair of testicles; as in the orchis. (5.)
- Handed.** An handed root, being a tuberosc one, divided as it were into several fingers; as in the handed satyrions.
- Grumous.** (6.) A grumous root, or that which is composed of several knobs; as the anemone, &c. (7.)
- Granulous.** A granulous root, or kind of grumous one, with several small knobs resembling grains of corn; as in the white saxifrage, &c. (8.)
- Tap-root.** A tap-root, or a tuberosc one extended in length in form of a tap or faucet; as those of carrots, parsnips, &c.
- The stalk of a plant.** The stalk or stem of plants and vegetables is the most principal or substantial part, which ariseth out of the root, and sustains the leaves, &c. and is, towards the upper part, generally divided into various limbs or branches. Scarce any thing admits more variety than the size, figure, colour, and texture of this part. I shall observe only the following particulars. (1.) That several stalks of plants have joints or knots, the uses of which are said to be the strengthening the stem, and finer growth; for the juices, being filtrated through these knots, are transmitted more fine and good to the upper parts, and to the fruit. (2.) The stalks of many plants are tubulous or hollow; hence a great quantity of air filling this hollow, conduces to the more expeditious ripening the fruit or seed; and also by drying up the sap, and shrinking the vessels, determines the life of the plant to a short period: hence most annual trunks are observed to be hollow. (3.) The pith is the middle part of the stalk, consisting of an immense number of little vesicles, which seem destined to filtrate and elaborate the finer juices necessary for the leaves, flowers, and fruit; according as the medullary substance of the brain secretes the fine fluid called the animal spirits. (4.) The wood, or lignous part of the stalk
- Their joints or knots.**
- Their cavity.**
- Their pith.**
- The wood.**

and trunks of trees: this consists of slender capillary tubes, running parallel to each other from the root up the trunk; these receive a fine juice, which distending their cellular texture, causes the trunk to grow and increase yearly in circumference; and those annular increments are visible on a transverse section of the trunk, and shew its age. (5.) Through all the woody or lignous part appears the system of air-vessels or tracheæ, easily discernible by the microscope; but of these already enough. (6.) The bark or rind, which makes the common integument of the trunk or stem of vegetables. This part consists of a fine skin or cuticle, under which lies the cortex or true skin, which we call the bark: the substance whereof is made up of small bladders, interwoven with fine soft and flexible fibres, which make a kind of reticular texture, the longitudinal fibres of which grow hard by degrees, become woody, and leaving the nature of bark, join the lignous substance in form of ringlets, making the sappy part thereof. But others are of a different mind concerning the nature and use of the bark, the theory of which is not yet settled.

Vessels.

Bark or rind.

The leaves of a plant are the next part to be considered. They are properly the most extreme part of a branch, and the ornament of the twigs; they consist of various fibres minutely ramified, the interstices whereof are filled with a parenchymous substance. The fibres are analagous to arteries and veins, which bring and return the sap after it is subtilized and refined in passing the vesicular texture of the parenchyma. Besides this, the business of transpiration is carried on in the leaves; for by their excretory vessels they exude or sweat forth what is superfluous in the circulation of the nutritious moisture. That leaves are the organs of vegetable respiration has been already observed; and that they not only expire, but also inspire or draw in the air through their numerous pores, is pretty reasonable to suppose; and that with the air, they imbibe a part of their nourishment likewise. Lastly, the leaves of trees serve for protection to the gems or buds, and the flowers and fruits, which are hereby screened in a good measure from the injuries of wind and weather. These are the principal of the many uses

Of the leaves of plants.

Their structure.

Transpiration.

Respiration.

The kinds of uses assigned to the leaves of plants. The size, form, leaves.

Simple.

Compound.

Pennated.

Ramose.

Intire.

Sinuated.

Serrated.

Crenated.

Laciniated.

The vegeta-
tion of leaves.

Of the flower
of plants.

Parts of a per-
fect one.

Empalement.

colour, and superficies of leaves, are so various, that it were endless to recount them. I shall only observe, that a leaf is said to be simple, which is not divided to the middle; and compound, when it is divided into several parts, each resembling a simple leaf. Thus when a leaf is divided into three simple ones, it is called trefoil; if into five, cinquefoil, &c. or they are said to be trifoliated, quinquefoliated, &c. Pennated leaves are such as are divided into several parts, like lobes, placed along the middle rib, either alternately, or by pairs; as in goat's-rue, agrimony, &c. A ramose leaf is that which is divided into several minute branches; as in osmund royal, female fern, &c. An intire leaf is that which has no division on its edges; as in the apple-tree, &c. A sinuated leaf is that which is cut about the edges into several large segments; as in the common mallow. A serrated leaf hath edges divided like the teeth of a saw; as in the nettle, &c. A crenated leaf is that which is cut about the edges into several obtuse segments; as in betony, &c. A laciniated leaf is that which is cut about the edges into jags, or deep portions, in an irregular manner; as in the horned poppy, &c.

The leaves are protruded from the stalk or stem by the great quantities of vernal sap, in the form of a gem or bud, wherein they lie curiously folded in plaits, and separated from each other by a fine pellicle or membrane. The sap arising now in great abundance, enters and fills the vessels of the tender leaf; this causes it to expand and extend itself quickly to its just or designed limits of growth. The efflux and reflux of the nutritious juices by the foot stalk of the leaf continuing a while, at length abates and declines, the juices then in the leaf begin to stagnate and grow putrid, whence a consumption ensues, and the leaf dies; which is the cause of the falling of the leaves in autumn.

The flower is that part of a plant whose curious form, charming fragrance, and beauteous colours, so delight our senses. This is certainly the most choice and delicate part of vegetables. A perfect flower is said to have the following parts: (1.) The empalement, calix,

calix; or flower-cup; this is that exterior part which encloseth the lower part of the flower, and is therefore also called the perianthum; its use is to strengthen and preserve the flower. (2.) The petala, or tender fine-coloured leaves, which are generally the most conspicuous part of the flower; this is also called the foliature. (3.) The stamina or chives, which are those fine upright stems which stand immediately within the foliature, and in many plants they arise from the petala or flower-leaves. (4.) The apices or summits, which grow on the top of the chives in the form of seeds, and contain a fine powder or dust called the farina, or meal of the flower. (5.) The stylus or pistil, which stands in the middle, within the chives, whose top is sometimes above, but generally below the apices, and grows on (6.) The matrix or ovary, or seed-case, in which the seed (in most plants) is contained and nourished in its embryo state; and this part is generally the rudiment of the fruit. The flowers which want any of these parts are reckoned imperfect ones.

Petala.

Stamina.

Apices.

Stylus.

Ovarium.

There is, as I have before observed, in plants as well as animals, a difference of sex, and the flowers are the pudenda or organs of generation in each plant. The male parts of the flower are the stamina, which bear the apices; and these, as testicles, contain the prolific powder or sperm of the plant. The female parts are the style, which serves as a vagina to receive and convey the spermatic farina of the apices to the seed-case, which is the matrix or womb; by which means the embryo seeds are impregnated with the prolific power of producing a future plant.

Of the sex and genital parts of plants.

Flowers are therefore some male, some female, and others hermaphrodite. The male flowers have the stamina and apices, but bear no fruit, and are therefore called staminate flowers. The female flower bears the style or pistil, which is succeeded by the fruit. These male and female flowers grow at some distance from each other on many plants, as cucumber, melon, gourd, Turkey wheat, turnsole, walnut, oak, beech, &c. Hermaphrodite flowers contain both male and female parts, and are by far the greatest tribe,

Of male, female, male, and hermaphrodite flowers.

A a

as

as tulips, lillies, daffodil, althæa, rosemary, sage, thyme, &c.

There is a large distribution of flowers into monopetalous, dipetalous, tripetalous, tetrapetalous, &c. according as they consist of one, two, three, four, &c. petals or leaves; but this is not worth any further regard here.

Of the fruit of plants.

The fruit is that part of a plant which succeeds the flower, and is designed to contain, preserve, nourish, and defend the seed. Hence, in the texture of this part, the more coarse and less concocted parts of the nutritious juices are filtered, and sent more pure, elaborate, and spirituous, to the seed, for the support and growth of the tender delicate embryo, or plantule therein contained.

The parts thereof.

Skin.

Parenchyma.

Branchery.

Core.

The composition of the fruit appears to be in general the same as that of the other parts of the tree. Thus (1.) The cuticle and skin of the fruit is only a production of the skin or outer bark of the tree. (2.) The parenchyma, or pulp of fruit, is only an expansion of the blea or inner rind of the tree, swollen and turgid with juices. (3.) The branchery or ramification are only a continuation of the woody fibres of the branch on which it grows. (4.) The heart or core of fruit is said to be produced from the pith or medulla of the branch, indurated and strengthened by the twigs of the wood and fibres inosculated therewith.

Parts of an Apple, Pear,

Cherry, Nut, &c.

But a prodigious variety obtains in this part of nature's workmanship, each species producing its fruit and seed in a different way and kind. Thus the apple hath four parts, viz. the skin, parenchyma, branchery, and core. The pear hath five distinct parts, the skin, parenchyma, branchery, calculary, (or stony part) and the acetary. The three first of these, and a stone, make the substance of cherries, plumbs, &c. The nut, acorn, &c. consist of three parts, the cap, the shell, and the pith or medulla, inclosing the kernel or seed. Concerning all which authors say a great deal with little certainty.

The falling off of the flower.

The fibres of the branches being first extended through the parenchymous part of the fruit to the flower, furnish the necessary matter for the vegetation of

of it; but as the fruit increases, it intercepts the aliments; and thus the flower is starved and falls off; while the fruit proceeds to grow, and hastens to a state of maturity.

The seed is that important part which is the medium of all vegetable propagation and production; it is most intimately contained in this year's plant, and the next year's plant is most intimately contained in it. This is both the beginning and end of the vegetable state.

The parts of which the seed of a plant doth consist, are (1.) The embryo or plantule, being the future plant in miniature, and is called the gem or bud; this adheres to (2.) The placenta or cotyledon, which serves the same purposes as the secundines, i. e. the chorion and amnion in animals. (3.) The common tunicle inclosing the whole seed.

Its parts.

Embryoplant:

Placenta, or Cotyledon.

Common coat.

The seed receives its fecundity, as I before hinted, from the genital parts in the flower; and being now committed to the earth, proceeds to vegetate as follows.

The plantule or gem of the seed being acted upon and moved by the genial influence and warmth of the two great parents, the sun and earth, begins to expand and protrude, or shoot forth its radicle or tender root downward in the earth, and the plumule or infant plant upwards; the small radicles absorb the nutritious juices, which causes the plumule to grow and increase to the destined size of the plant: but till the root is shot, and able to procure nourishment, the plantule is nourished from the substance of the placenta or cotyledons, which it draws to itself by an infinite number of little filaments called funes umbilicales or navel-strings, and by botanists the seed-root. By this means the embryo plant receives the cruder juices of the earth prepared and purified, being strained through the very substance of the placenta. When the root is able to provide for a plant, the cotyledons, or two lobes of the placenta, perish, and the plant may be said to be delivered of its young or foetal plant: so analogous is the process of nature in the vegetable and animal œconomy!

The vegetation of the gem or plantule.

The fourth
great part of
botany.

The fourth and last part of botany is concerned in the following particulars: (1.) To give an exact enumeration, and the names of all the plants yet known in every part of the world, which are at this time about 16000 in number. (2.) To specify the peculiar notes, marks, properties and characters of each plant, by which it may be known and distinguished from any other. (3.) The place of its most common growth, as on land or water, wet or dry ground, on walls, trees, &c. (4.) The time of blooming, and their continuance in bloom. (5.) To recite their qualities, and give a just and true account of the medicinal virtues that are known to pertain to each. (6.) To teach the method of propagating each species in gardens, &c. for the various uses of ornament, food, medicine, or natural philosophy. But, as I at first observed, these particulars are of too general a nature, and alone the subject of the largest volumes, and consequently cannot be expected here.

Of A N A T O M Y. Containing a brief Description of all the Parts of a HUMAN BODY.

ANATOMY is the art which teaches the true knowledge of the human body (principally, but of any animal body in general) as to the structure and component parts thereof, by an artful and orderly dissection, or severing the parts and members of it from one another, by a proper instrument. This art is divided into two great parts, viz. (1.) Osteology, or the doctrine of the bones in general; and (2.) Sarcology, which treats of all the fleshy parts of the body.

Anatomy defined.

Is divided into osteology and sarcology.

Osteology (according to the learned Boerhaave) is divided into three parts, viz. (1.) Osteogony; which treats of the origin of the bones, of what matter they consist, and the condition of the bones in their proper substance when actually formed. (2.) Osteography, which teaches the knowledge of the structure of the skeleton or fabric of the bones, and the diversity of parts in the bone itself now perfect. (3.) Synosteology, or synosteography; which explains all the parts of a bone, by means of which a bone is connected or joined to a bone, with motion, or without motion; with a cartilage, or without it.

Osteology divided into osteogony,

Osteography.

Synosteology.

Sarcology also has a threefold division, viz. (1.) Myology, which teaches the doctrine of the muscles. (2.) Splanchnology, which treats of the bowels (or viscera) and the great organs of animal life; as the brain, lungs, stomach, intestines, &c. shewing their nature, connection, parts, figure, site, &c. (3.) Angiology, or angiography; this exhibits a description of all the various vessels in the body; as the arteries, veins, nerves, &c. explaining their natures and uses. Of all which take a concise account in their order.

Sarcology is divided into Myology, Splanchnology,

Angiology.

Osteogony explained.

A bone defined.

The genesis of the bones.

Their first state of fluidity

Their second, or fibrous state.

Their third, or membranous state.

Their fourth, or cartilaginous state.

Their fifth and last state of a perfect bone.

Why bones are hardest and smallest in the middle.

Osteogony being a description of all the mutations or changes a bone undergoes from its first conception in the womb to its last state of perfection in the adult skeleton, it naturally falls under the following considerations, viz. (1.) The definition of a bone; which is said to be the hardest, whitest, and lightest part of the body, inflexible and insensible; consisting of a complex substance of a vascular, fibrous, membranous, and cartilaginous nature. (2.) The genesis of a bone; this consisteth of various states and gradations, from its first origin to its last perfection. For, (1.) The first state of a bone is that of a terrestrial, nutritious, fluid matter, flowing among the fluids (in *ovo*) designed for the formation of the other parts of the body. (2.) The parts of this original earthy fluid at a proper time begin to cohere, unite, and thus form themselves into very small or fine capillaments, threads or fibres, soft and porous, which being filled with a lymph of the same nature, they begin to increase, harden, and grow close to one another. (3.) The fibres thus formed strike into various directions, and being thus interwoven in the manner of a web, they constitute a sort of harder, white, broad, elastic substance, called a membrane. (4.) These membranes, as their fibres become gradually hard and dry, do themselves begin to consolidate, and form hard, thin, white substances, which lie on one another in the manner of thin plates, or lamellæ, between which run a great number of vessels carrying fluids proper for moisture and nourishment; which altogether constitute or make up the white, hard, friable and elastic substance, called a cartilage. (5.) Since the largest artery hath the greatest pulsation, and this being in the middle of the bone, it will there first become a cartilage, which by degrees becomes harder and more compact, till at last it is perfectly ossified, or arrived to the proper consistence of a bone; and the blood-vessels being now compressed on all sides, bring no more blood than what is sufficient to supply the place of the decaying particles; they having now obtained their utmost extent, hardness, and solidity. And hence, since bones begin to ossify in the middle parts first, it is easy to understand they will of consequence be there

there both hardest and smallest; while, on the contrary, they will be more extended towards the extremities, and of a more soft and cartilaginous nature. Thus much for osteogony.

Osteography, in the next place, teaches the fabric of the bones, or the structure and compages of a skeleton. Osteography.

A skeleton, then, is a system of bones cleared of the flesh, and joined together in the same manner as they existed in the body. In order to understand this aright, it will be necessary to mention the several affections of a bone, and the manner of their articulations. A skeleton, what.

The affections of a bone, which I shall here observe, are of two sorts, viz. cavities and prominencies. The cavities of bones are deep or shallow. A deep cavity is called Cotyle; but the superficial one is called Glene. The prominencies of a bone are of two kinds, viz. (1.) An Apophysis, which is a protuberance made by the fibres of a bone. (2.) An Epiphysis, which is only a small bone set upon the extremity of a bigger bone, which in time unite in one. Both the one and the other are usually upon the extremities of the bones, and serve either for the insertion of muscles, or the articulation of the bones. If the protuberance be large and round, it is called Caput, or the head; if small and round, it is called Condylus; if sharp, Corone, Styloides, &c. Affections of the bones.
Cotyle.
Glene.
Apophysis.
Epiphysis.
Condylus.
Corone.

The articulations of the bones are of the following kinds. (1.) Diarthrosis, where there is a manifest motion. (2.) Synchrondrosis, which is by means of a cartilage, and with a small and obscure motion. (3.) Synarthrosis, without any motion at all. The articulation of bones.

Diarthrosis is again of three sorts: (1.) Enarthrosis; which is when a large round head of a bone is received into a large cavity; as of the thigh-bone in the Ischium. (2.) Arthrodia, which is when a flat plain head of a bone is received into a shallow cavity; as the articulation of the Humerus with the Scapula. (3.) Ginglymus, which is when the bones articulated mutually receive and are received by each other; as in that of the Humerus and Cubit. Diarthrosis.
Enarthrodia.
Arthrodia.
Ginglymus.

A a 4

Synchrondrosis

Synchondrosis Synchondrosis is when the extremities of two bones are joined together by means of an intervening cartilage, as in the vertebræ, and the ribs and sternum; where though the motion of all is manifest, yet that of any two is scarce perceptible.

Synarthrosis, Harmonia. Synarthrosis is also of three sorts. (1.) Harmonia, which is by a simple contact of the extremities of bones, without any mutual ingrefs, and is designed by a right or oblique line.

Sutura. (2.) Sutura, which is when two bones are mutually indented into each other, and look like the teeth of a saw; as in the articulations of the bones of the scull. (3.) Gomphosis is when a bone is fastened or socketed into another; as the teeth in the jaw-bones.

Gomphosis. In the skeleton we shall take a view of the bones in the following order, viz. Of the scull, the spine, the thorax, the pelvis, the arms, and the legs.

Of the bones of the skull. The bones of the scull or cranium are six, viz. **Os frontis.** (1.) The os frontis, or forehead-bone; it forms the upper part of the orbits of the eyes, and the forehead; and joins the bones of the sinciput and temples, by what is called the coronal future.

Parietalia. (2.) and (3.) The two bones of the sinciput, called parietalia, which make the sides of the scull, and are joined to one another in the crown of the head, by the futura sagittalis.

Ossa temporum. (4.) and (5.) The ossa temporum, or two bones of the temples; they are situated in the lower part of the sides of the scull, and are joined to the parietalia by the futura squamosa.

Os occipitis. (6.) The os occipitis, or bone of the occiput or hinder-part of the head; it joins the ossa parietalia; by the futura lambdoidalis.

The processes of the temporal bones. The lower part of each temporal bone, being thick and hard, is called os petrosum or stony bone; they have also each three processes, viz. (1.) The zygomatic, which runs forward and unites with the process of the upper jaw-bone, making the bridge called zygoma, under the ear. (2.) The mamillary or mastoide process, situated behind the passage of the ear. (3.) The styliform process, which strikes down from the basis of the scull like the end of a quill,

There

There are two bones common to the scull and upper jaw, viz. (1.) The sphænoides; it is situate just in the middle of the basis of the scull; on its lower side it has five apophyses; two called the pterigoides, or wing-like processes; two others make the lower and internal part of the orbit of the eyes; and the fifth a very small one, received in a cavity at the further end of the vomer. On its inside it has four processes called clinoides, which form a cavity in the middle called sella turcica. (2.) The os ethmoides; it is situated in the middle of the basis of the forehead-bone; in the middle of it is a small thin process called crista galli, from its likeness to the comb of a cock. This bone hath its name from the number of small holes in it, which make it resemble a sieve. From its under side there goes a thin bone, which divides the cavity of the nose into two parts called nostrils: the lower edge of this bone is groved with the vomer. On each side this partition are the ossa spongiosa, or spongy bones; the two external plates whereof make part of the orbit at the greater canthus or corner of the eye.

Bones of the scull and upper jaw.

Os sphænoides

Os ethmoides, or cribriforme

Ossa spongiosa

The bones proper to the upper-jaw are eleven; five on each side, and one in the middle: they are as follow. (1.) Os mali, zygoma, or cheek-bone; it makes the highest part of the cheek, and the external part of the orbit of the eye. (2.) The os maxillare is that part in which all the teeth of the upper-jaw are set; its upper side makes the lower and internal part of the orbit. (3.) The os unguis; it is a little bone in the great angle of the orbit; in it is the hole in which the lachrymal bag lies. (4.) The os nasi, or bone of the nose; to this the cartilages which divide the nostrils are fastened. (5.) The os palati, or palate-bone; it makes the hinder-part of the roof of the mouth, and joins the os maxillare, which makes the fore-part. (6.) The eleventh and last is called the vomer, being like a plow-share as it were; it has a groove on its upper part, which receives the septum nasi, or partition of the nose; it is joined above, on the further end, to the os sphænoides, and on its lower part to the bones of the palate.

Bones of the upper-jaw.

Os mali.

Os maxillare.

Os unguis.

Os nasi.

Os palati.

Vomer.

The

Bone of the lower jaw.

The lower jaw is made of one bone; its anterior angular part makes the chin. At each extremity it has two processes; the first, which is broad, thin, and pointed, is called corone; the other, which is lower and flattish, with a sort of head, is called condylus; by means whereof the lower jaw-bone is articulated into the sinus of the os petrosum. Each end of the basis of this bone is called the angle of the lower jaw.

Of the teeth.

The teeth are next to be considered; they are the hardest, smoothest, and whitest bones of the body. They are formed in the cavities of the jaws, and are of the following sorts. (1.) The incisivi, or cutters, so called because pretty broad and sharp; they stand foremost in each jaw, and in each jaw four. (2.) The canini, or dog-teeth; these are two in each jaw, one on each side of the incisivi; they are thick, round, and pointed, and are contained above two thirds in their alveoli or sockets. (3.) The molares, or grinders; they are generally ten in each jaw, five on a side. Their extremities are broad and uneven, and are inserted in their sockets with two, three, and sometimes four roots. With these we grind, as it were, our aliments, to a state fit for digestion in the stomach.

Of the spine, and vertebræ.

The spine, or back-bone, is made of a chain of small bones, which reaches from the basis of the skull to the seat of the body. These small bones are called vertebræ; of which there are reckoned seven in the neck, twelve in the back, five in the loins, six in the os sacrum, and four in the os coccygis. In each vertebra we distinguish two parts, viz. the body, and the processes thereof. The body of the vertebra is round and convex on its fore-part, and somewhat concave on its hind-part. Its upper and lower sides are plane, each covered with a cartilage, for the sake of the motion and flexure of the body. Each vertebra has three sorts of processes, viz. (1.) Transverse or lateral, one on each side; they are nearer the body of the vertebra than the rest. (2.) Four oblique processes, two on the upper part, and two on the lower; by these the vertebræ are articulated to one another. (3.) One acute one, on the hindmost part of the vertebra. These processes, with the hinder and concave part

Their processes.

part of the body of the vertebræ, make a large hole in each vertebra, which holes all together make a channel for the descent of the spinal marrow.

The vertebræ of the os sacrum coalesce in adults, and make but one large triangular bone, whose basis is tied to the last vertebra of the loins, and its points to the os coccygis, which, with its little vertebræ, each less than the other, ends the spine in a cartilaginous point, like a small tail curved inwards.

Os sacrum.

In the thorax of the skeleton we observe the following bones. (1.) The ribs, which are twenty-four in number, twelve on each side, articulated to the twelve vertebræ of the back. They are of two sorts, viz. seven true ribs, which have their cartilaginous extremities inserted into the sinus of the sternum; and five false ribs, which are shorter and softer, and their extremities tied to one another; except the last, which is tied to the midriff, or else to the descending oblique muscle. (2.) The sternum, or breast-bone; this from seven or eight bones in infants, hardens and unites into three at seven years of age: it is situated in the middle of the breast: it receives the cartilages of the ribs, and ends itself in a cartilaginous point, called cartilago xiphoides or ensiformis. (3.) The claviculæ, or channel-bones; they are two, one on each side, on the upper part of the breast; they are pretty long and small; at one end they are articulated to the sternum; at the other, to the production of the scapula called acromion. Their use is to sustain and keep the scapulæ at a proper distance from the sternum. (4.) The scapulæ, or shoulder-blades; they are two large and broad bones in form of a scalenous triangle; they are situated on each side of the upper and back part of the thorax. The broad end is called the basis; and each hath three processes; one running along the middle, called the spine, the end of which is called acromion, and receives the clavicles: the second is a little below, called coracoides, from its likeness to a crow's bill: the third process is called cervix, and receives the head of the humerus, or arm-bone, in its sinus.

Bones of the thorax.
Ribs.

Sternum.

Claviculæ.

Scapulæ.

The pelvis or basin of the skeleton is formed by the following bones, viz. (1.) The os sacrum; and (2.) The os coccygis on the hinder part, both already described.

Bones of the pelvis.

Os ilium.

Os pubis.

Os ischium, or
coxendix.Bones of the
arm and hand.
Humerus.

Ulna.

Radius.

Of the carpus.

Metacarpus.

Of the fingers.

described. (3.) The ossa innominata, or nameless bones; which in infants consist of three separate bones; but in adults they unite and make but one bone, in each of which they distinguish three parts, viz. (1.) The ilium, or hip-bone; which is the broad superior part joined to the vertebræ of the os sacrum; its edge is almost semicircular, and is tipped with a cartilage. (2.) The os pubis, which is the inferior and fore part, and joined with its fellow on the other side, makes the fore part of the basin or pelvis, as the ilia does the sides. (3.) The os ischium or coxendix; this is the lower and hinder part; it has a large cavity or acetabulum, which receives the head of the thigh-bone: at its lower part it has a large protuberance, which makes the seat of the body, or that on which we sit.

In the arm are the following bones, viz. (1.) The humerus, or shoulder-bone; it is long and round, is articulated with the scapula at the upper end, and at the lower with the radius and ulna, by a ginglymus. (2.) The ulna, a long and hard bone of the cubitus or fore arm; it reaches from the elbow to the wrist; at its upper end it hath two processes, which are received into the fore and hind sinus's of the extremity of the humerus; the external or hindmost is the biggest and longest, called olecranon, and makes the sharp point of the elbow. At its lower end it is articulated with the radius and the bones of the wrist. (3.) The radius, another bone of the cubit; it accompanies the ulna from the elbow to the wrist. In its upper end it receives the outer protuberance of the humerus in a small cavity, and near its lower end it has a small cavity which receives the end of the ulna; and in its extremity it has two sinus's, which receive the bones of the wrist. (4.) The bones of the carpus, or wrist; they are little bones of different figures and bigness, are eight in number, placed in two ranks, four in each rank. The first rank is articulated with the radius, the second with (5.) The bones of the metacarpus, or back of the hand: these are four in number, which answer to the four fingers, with one on the side answering to the thumb: they are articulated with the bones of the wrist and fingers. (6.) The bones of the fingers and thumb; they are fourteen in each

each hand, three in each finger, and two in the thumb. The order in which they are disposed, is called the first, second, and third phalanx; the first is longer than the second, and the second than the third: they are severally articulated with the bones of the metacarpus, and with one another in each finger; which articulations make the joints or knuckles. (7.) The ossa sesamoidea, like grains of sesamum; they are about twelve in each hand, placed at the joints of the fingers, under the tendons, where they serve the office of pulleys.

Ossa sesamoidea.

The parts of the leg, and the bones thereof, are very analogous to those of the arm; for (1.) In the thigh there is one large long bone answering to the humerus. At its upper end it has three epiphyses; the first is the large round head, by which it is articulated in the acetabulum of the coxenaix; the second is called the trochanter major, and the third the trochanter minor. The lower end of this bone is articulated by the ginglymus with (2.) The tibia, which is the greatest of the two bones of the leg, the other being (3.) The fibula or perone; these two answer to the ulna and radius or the cubit, and their articulations with each other are much the same. At the lower end of the tibia there is a process, which forms the internal angle, as the external angle is formed by a process of the fibula. The articulation of the tibia with the thigh-bone, make the knee; in which there is, (4.) A little bone called the patella or knee-pan; it lies under the tendons of the muscles which extend the leg, and serve as a pulley to facilitate their motion. (5.) The bones of the tarsus, or instep, are seven; the astragalus, or talus; the calcaneum, or heel-bone; the os naviculare; the ossa cuneiformia, or wedge-like bones, which are three; and the os cubiforme, or cube-like bone. (6.) The metatarsus, or back of the foot, hath five bones; and (7.) Toes fourteen: besides, (8.) The ossa sesamoidea; all which are in form and articulation so like those of the metacarpus and fingers, before described, that nothing further need be said concerning them.

Bones of the thigh, leg and foot.

Os femoris.

Tibia.

Fibula.

Patella.

Of the tarsus.

Metatarsus.

Ossa sesamoidea.

Having dispatched Osteology, we proceed to Sarcology, the second great part of anatomy. In order to this,

Of sarcology.

The division
of the body.

this, anatomists divide the trunk of the human body into three principal regions or cavities. (1.) The head, or upper cavity, which contains the brain and cerebell; the eyes, nose, ears, and tongue, the organs of sense. (2.) The thorax or breast, which contains all from the neck to the midriff. (3.) The abdomen, or lower cavity, which is what we vulgarly call the belly. The upper part of the abdomen is called epigastrium, and its two sides the hypochondria. The middle part of the abdomen, extending from two fingers breadth above to the same below the navel, is called the regio umbilicalis. The lower part of the abdomen is called the hypogastrium; its sides are called inguina or groins.

Of the com-
mon integu-
ments of the
body.
Epidermis, or
cuticle.

Before we can speak of Myology, or the doctrine of the muscles, we must first take notice of the common integuments or coverings of the body and its parts; and they are as follow: (1.) The epidermis, cuticle, or scarf-skin; this is that very fine pellicle that rises in a blister upon any burning, &c. It adheres close to the true skin, and serves to defend the extremities of the fine vessels. (2.) The cutis, or true skin; in this we observe three parts: first, an infinite number of papillæ pyramidales, which are the ends of the nerves of the skin, which occasion the sense of feeling on the surface of the body. Secondly, A web of nervous fibres and vessels interwoven, and is the parenchyma or substance of the skin. Thirdly, Under this is an infinite number of miliary glands encompassed with fat: these are the spiracles of the body, and breathe forth the matter of sweat and insensible transpiration. (3.) The membrana adiposa, or membrane of fat; it lies immediately under the skin; the fat is contained in a texture of an infinite number of fine transparent vesicles or cells. (4.) The membrana carnosæ, or fleshy membrane; it lies immediately under the adiposa, and adheres to it; it is conspicuous in infants, but in adults it becomes obscure, and is hid by the fat, which overspreads it. (5.) The hair is reckoned one of the common teguments of the body; each hair has a round bulbous root; is fistulous or hollow in many cases, and differs in colour according to the temperament of persons.

The cutis, or
skin.
Papillæ pyra-
midales.

Miliary glands

Membrana
adiposa.

Membrana
carnosa.

The hair.

persons. (6.) The nails are a covering to a part of the body only; they are supposed to be only the sheaths or cases of the papillæ of the skin on the fingers and toes, which dry, harden, and lie close to one another, and are protruded constantly forwards in the form of an horny substance.

The next step to the doctrine of the muscles, is that of the membranes, which wrap up and enclose the parts: they are of various sorts as follow: (1.) The periossteum, which is that fine membrane immediately investing the bones, and which is of a most exquisite sense. (2.) The meninges of the brain, which are two; the first is called dura mater, which is strong and thick, and covers all the cavity of the skull; and by its processes makes the divisions of the two lobes of the brain and cerebell. The second is called the pia mater, which is a fine and delicate membrane immediately covering the substance of the brain; they are both continued from the brain with the spinal marrow. (3.) The pleura, which is a double membrane that covers all the cavity of the thorax, is fixed to the periossteum of the ribs, and covers the midriff. (4.) The mediastinum; it is a double membrane dividing the cavity of the thorax into two parts, through the middle from top to bottom; it is formed by a continuation of the pleura coming from the sternum. (5.) The pericardium, so called from its containing the heart, as in a kind of purse or bag; it lies in the duplicature of the mediastinum, which firmly adheres to it, as its point does to the middle part of the midriff. (6.) The diaphragm or midriff; this is rather a double muscle than a membrane; it divides the thorax from the abdomen. Its extreme parts consist of muscular fibres, which all terminate in an aponeurosis, or nervous part, in the middle; it is perforated with several holes, for the passage of vessels. (7.) The peritonæum; it is a thin soft membrane which covers the cavity of the abdomen, and incloses all its contents; it is connected with the midriff and muscles of the abdomen; it is a double membrane, and contains in its duplicatures the umbilical vessels, the bladder, the kidneys, ureters, spermatic vessels, &c. Its external part has two productions

The nails.

Of the principal membranes.

Periossteum.

Meninges, or pia and dura mater.

Pleura.

Mediastinum.

Pericardium.

Diaphragm.

Peritonæum.

Its duplicatures.

ductions which pass through the groins out of the belly to convey the spermatic vessels in men to the testicles, and for a passage to the round ligaments of the womb in women. These are all the membranes that can be simply considered as such, or that deserve notice in this place. We are now arrived to

Of Myology.

Myology, or the doctrine of the muscles; concerning these we shall take notice of the following particulars, viz. The definition of a muscle, its parts, the sorts, the denomination, the actions, or office, and number of muscles in each part, and the whole human body.

A muscle defined.

A muscle is defined to be a bundle of fleshy, and often tendinous fibres, of which all in the same plane are parallel to one another; the fibres are severally invested with a particular membrane, and all together inclosed in one common one.

The parts of a muscle. Belly.

The parts of a muscle are, (1.) The body or belly of the muscle, which is the middle part generally, and is made up of the fleshy fibres, which are red, lax and spongy, containing a number of small cavities, and are tied together by a number of small transverse fibres, which go from one to another, and connect them all together. (2.) The tendons, which are the two extremities; of which, that by which it arises is called the head, and the other, by which it is inserted into any part, is called the tail of the muscle. They consist of tendinous fibres equal in number to those of the body of the muscle.

The kinds of muscles.

The kinds of muscles are various; as (1.) Some are simple; which have all their fibres parallel, and in the same direction. (2.) Some compound; these have the fleshy fibres of several planes crossing one another, or of different directions; and may be divided into as many simple ones as is the number of such planes of fibres. (3.) Some muscles have several heads, or arise by several tendons; as the biceps hath two, the triceps three, &c. (4.) Some have one tendon common to them all, as the tendo achillis. (5.) Some have only a small long body which divides into several small tendons at the end. (6.) And some have two bodies each, as the digastricus. (7.) Some muscles have no tendons, as the quadratus on the wrist, and several

several of the face, &c. (8.) Some have tendons only at one end; with various other differences in the form and make of muscles.

As to the denomination of muscles, they are differently named on various accounts; as (1.) From their size; as vastus, large; gracilis, slender, &c. (2.) From their form; as the deltoides, quadratus, &c. (3.) From the parts they are situated on; as the frontales, on the forehead; occipitales, on the occiput, &c. (4.) The manner of their situation; as internus, externus, &c. (5.) From the parts of their origin and insertion, as the sternothyroides, which arises from the sternum, and is inserted into the cartilage called thyroids. (6.) From their course or direction; as the rectus, obliquus, transversalis, &c. (7.) From their manner of acting; as elevatores, which lift a part up; erectores, which erect a part; extensores, which extend any part; flexores, which bend it, &c. (8.) From the parts of which they consist; as the biventer, which hath two bellies; triceps, which hath three heads or tendons, &c. (9.) From the texture; as membranosus, semi-nervosus, &c. (10.) From their length, &c. as longus, long; brevis, short, &c.

The office or function of the muscles is to move the several parts of the body in all the necessary directions of their several motions; and this is performed by the contraction of the muscle, which shortens it, and causes it to draw the part into which it is inserted towards that whence it arises; and this contraction is produced in the muscle by the influx and rarification of the blood and spirits distending the cavities of the fibres; which is the mechanical cause of all muscular motion. And since most parts of the body are paired, or have a contrary motion, the muscles are reckoned by pairs; and those which produce the contrary motion in a part, are said to be antagonist muscles to each other.

The number of the muscles in the human body is computed by Dr. Keill in pairs belonging to every part, as follows: of the forehead 1 pair, the hind-head 1, the ears 6, the eyebrows 1, eyelids 2, eyes 6, nose 3, lips 6, and a single one; the cheeks 1, lower jaw 6, uvula 2, tongue 3, os hyoides 5, the pharynx 2,

B b

larynx

Their names.

The action or function of a muscle.

Their number in the several parts of the body.

larynx 7, head 10, thorax 29, abdomen 5; of the vertebræ 7, of the pudenda in men 4, the clitoris 1, of the bladder a single one, anus three single ones; of the shoulder-blades 4, shoulder-bone 9, cubit 6, the radius 4, wrists 4, palms of the hands 2, fingers 15, of the thumbs 7, fore-fingers 2, little-fingers 2, of the thighs 13, the legs 11, the feet 8, the toes 24 pair; so that in all there are 446 single muscles in the body; though some make more, and others reckon fewer.

Before we consider the doctrine of the viscera or bowels, it may be proper to premise a few things concerning the doctrine of the glands, which anatomists call adenography, as a proper transition thereto.

Of adenography.

A gland, what.

Conglobate.

Conglomerate.

A gland (vulgarly called a kernel) is a fleshy substance of a peculiar nature, whose use is to secrete and separate the fluids from the mass of blood. They are of two sorts, viz. (1.) A conglobate gland; which is a little smooth body wrapt up in a fine skin, admitting only an artery and nerve to pass in, and a vein and excretory vessel to pass out; and these may be called simple glands. (2.) A conglomerate gland; which is composed of several conglobate or simple glands, all tied together, and wrapt up in one common tunicle or membrane; whose several excretory ducts do sometimes all unite in one common pipe, as in the pancreas; and sometimes form several pipes, through which their liquor is excreted. The structure of a gland is supposed to be nothing but the complication of a branch of an artery, whose farthest extremity becomes the excretory duct thereof. Proceed we now to the second great part of splanchnology, viz.

Of splanchnology.

Splanchnology, which considers the various viscera or bowels contained in the three cavities of the body: those in the upper cavity or head are, the brain, the cerebell, the eyes, the ears, the nose, and the tongue; of which in order.

The brain.

The brain, contained within the dura mater, consists of two parts, viz. the cerebrum, which lies on the fore part; and cerebellum, which lies behind; both contained in the cranium or skull, as in a case of bones. The cerebrum is of an oblong figure, and its surface full of turnings and circumvolutions; its external substance is said to be cortical or cineritious, being

The cerebrum

being soft, glandulous, and of the colour of ashes. Its internal, called the medullary substance, is finer, white and fibrous; from whence the nerves proceed: this going out of the skull is called the medulla spinalis, or spinal marrow.

The brain is divided by the first process of the dura mater into the right and left side; which, when they come to join, leave a space forming three ventricles, or centrum ovale; the upper part or covering whereof is called the corpus callosum. The bottom of this space is the internal substance of the two sides gathered together, as it were, in two bundles, which are called crura medullæ oblongatæ; upon them are the protuberances called the corpora striata, and the thalami nerv. opticorum. These crura uniting, form a body called the medulla oblongata, upon which are four prominencies called the nates and testes. From the third ventricle goes a small hole to the conduit called infundibulum, which enters the substance of the glandula pituitaria, situated in the sella turcica, in the basis of the skull, and surrounded with a plexus of some branches of arteries, called the rete mirabile. In the hinder part of this ventricle is another small hole called anus, in the upper part of which is situated the famous glandula pinealis, which Descartes imagined was the seat of the soul. These are the chief parts of the cerebrum, and give a general idea of its structure.

The cerebellum is much less than the cerebrum, and is also composed of a cortical and medullary substance; its superficies consists of foldings like segments of circles, one within another; they grow less as they approach the fore and hind part, where they seem to resemble two worms, and are therefore called processus vermiformes. The part of the medulla oblongata, which is between the cerebrum and cerebellum, is called the isthmus. The use or function of the brain (which is a gland of the conglobate sort) is to separate the finest and most subtle parts of the blood, called animal spirits, which are received by the nerves, and conveyed to all parts of the body; in which they are the cause of all that sensation which we commonly call feeling.

The cerebellum.

The use of the brain.

Of the eye, and its external parts. The eye is the noble organ of sight; on the external parts it is adorned above with a curved row of hairs, called the eyebrow; and closed with two eyelids, which are edged with a border of hairs called cilia. The meeting of the eyelids make two corners called the greater and lesser canthus of the eye; within the great canthus lies the glandula lachrymalis, which separates the matter of tears for moistening the eye, and inner membrane of the nostrils, where it is conveyed from the lachrymal bag by a small pipe through the os lachrymale. The globe of the eye is moved by four strait muscles and two oblique ones.

Its coats.

The conjunctiva.

Sclerotica.

Cornea.

Choroides.

Uvea.

Retina.

Of the humours of the eye.

Aqueous.

Crystalline.

Vitreous.

The coats of the eye are, (1.) The conjunctiva, which makes the white of the eye, and lines the inner part of the eyelids, joining the globe to the edges of the orbit. (2.) The sclerotica; it is thick, hard and smooth; opaque behind, but transparent before, where it makes, (3.) The cornea, which is surrounded by the white of the eye, and has a most exquisite sense. (4.) The choroides; it lies under the sclerotica, and is much thinner than it. In this coat is a small hole before, called pupilla, or pupil of the eye. (5.) The uvea; it surrounds the pupil, and by its muscular circular fibres contracts and dilates the pupil as occasion requires; it lies on the crystalline humour; the outside of this coat is called the iris, of different colours in several people. On the inside is the ligamentum ciliare, by the contraction of whose fibres the eye is made more prominent, and the axis of vision lengthened. (6.) The retina, or net-like expansion of the medullary fibres of the optic nerve over the bottom of the eye, upon the surface of the glassy humour. On this coat the impressions of objects are made, in order to be conveyed to the sensory of the brain.

The humours of the eye are three, viz. (1.) The aqueous, or watery humour; it lies under the cornea, and makes the fore part of the globe. (2.) The crystalline humour; it lies next behind the aqueous; it is the least of the humours, but the most dense; its form is that of a double convex lens; it is covered with a fine coat called aranea. (3.) The vitreous or glassy humour; it is very much like the white of an egg, fills all the hind part of the cavity of the globe,

is the largest of the three humours, and is contained in a coat of the same name. By it the crystalline is adjusted to a proper distance from the retina for distinct vision, the manner whereof has been already explained.

The ear is the organ of hearing, and is next to be described. It is divided into the external and internal part; the external is divided into the pinna or upper part, and fibra or lobe, which is the lower. The parts of the pinna are the helix, or circular border of the ear; and anti-helix, which is a semi-circle within the other: the lower end of this makes a prominence called the anti-tragus, with respect to another opposite to it called the tragus, by reason of some hair that is on it. The cavity made by the extremities of the helix and anti-helix is called concha. The hollow in the middle of the ear is called alvearium; from whence there goes a passage to the tympanum called meatus auditorius.

Of the ear:
Its external part.

At the end of the meatus auditorius is a thin transparent membrane placed a little obliquely across the passage, called the membrana tympani, or head of the drum; for the cavity behind this membrane is called the tympanum or drum, in which there are four little bones, from their shape called the malleolus or hammer, the incus or anvil, the stapes or stirrup, and os orbiculare, or round bone. The next cavity is called vestibulum, in the os petrosum; into it open the semi-circular pipes of the third cavity called the labyrinth. The last cavity of the internal ear is called cochlea from its likeness to a snail's shell. The auditory nerve, being finely expanded over the internal surface of these cavities, receives the impressions of the included air according as it is agitated by the motion of the external air beating on the membrana tympani, thus exciting in the sensory of the brain the ideas of sounds.

Its internal parts.

The nose is appointed not only for the organ of the sense of smelling, but also for an emunctory to the brain, and for respiration. Its upper part consists of two bones closely joined together on the upper side; its lower part is made of four cartilages, two of which are fixed to the two bones aforesaid, and also joined

Of the nose
and its parts.

on the upper side; the other two lie on the lower ends of these, being tied thereto by a membrane, and are called *alæ narium*. The cavity of the nose is divided into two parts, called *nares* or *nostrils*, by a partition bony on the upper part, and cartilaginous on the lower: the upper end of each nostril divides into two cavities, of which one goes to the *os spongiosum*, and the other opens behind the palate into the mouth for respiration. The *ossa spongiosa* fill the upper cavity of each nostril, the several lamina of which, being covered with a fine membrane on which the fibres of the olfactory nerve are spread, become the immediate organ of smelling. The cavity of the nose is covered with a glandulous membrane; its glands separate the matter we call *mucus*, which, with the hair growing on it, called *vibrissi*, prevent any filth from ascending too far into the nostrils.

Of the mouth.

Lips.

Gums.

Palate.

Uvula.

Glands of the mouth.

The mouth consists of the lips, the gums, the palate, the uvula and the glands; of which in order. (1.) The lips are made up of several muscles, which give them all their various motions for shutting and opening the mouth, and articulating the voice. (2.) The gums are a hard sort of flesh formed by the union of the *periosteum* and the internal membrane of the mouth; they are set about the teeth to keep them firm in their sockets. (3.) The palate, or roof of the mouth, is covered with a pretty thick membrane, in which are a great number of small glands, which discharge a liquor for moistening and dissolving the aliments. (4.) The uvula is a production of the internal membrane of the mouth; its substance is lax and glandulous; it hangs from the roof of the mouth about the larynx, between the tonsils; it is moved by two pair of muscles, which give it motions proper for articulating the voice, and to prevent any thing's regurgitating into the nose in deglutition. (5.) The glands of the mouth are of several sorts, as the parotides under the ear, the maxillares under the jaw, the sublinguales under the tongue, the *tonsillæ*, or almonds, at the basis of the tongue; with several other small ones; all which serve to separate the saliva or spittle to moisten the food in mastication.

The

The tongue is the grand organ of taste and speech; it is connected to the os hyoides, and to the larynx, by a ligament in the middle of its lower side; it is of a muscular substance, and is covered with two membranes; the external hath a great number of papillæ pyramidales, which seem to serve as cases to the papillæ nervosæ, which lie under them in the internal membrane. These nervous papillæ being made of the extremities of the gustatory nerve of the tongue, are the immediate organs of tasting. The tongue is moved by three pair of muscles, the styloglossus, genioglossus, and ceratoglossus, and the os hyoides, with motions proper for the forming and articulating the various sounds of speech.

Of the tongue.

Papillæ nervosæ.

The upper is joined to the middle cavity of the body by the cervex or neck, in which is the jugulum or throat; which contains two remarkable parts, the œsophagus, and the trachea arteria, or wind-pipe.

Of the viscera in the thorax.

The œsophagus, or gullet, is a long round canal, by which the aliments descend from the mouth to the stomach in the abdomen: it is composed of three coats; the first membranous; the second fleshy and muscular; the last, or inmost, is white, and besmeared with a soft slimy substance, separated by the glands between this and the second coat, to facilitate the descent of the aliments in deglutition. The upper end of the gullet is called pharynx, and is moved by two pair of muscles, viz. the stylo-pharyngæus, and the œsophagæus, and the peristaltic motion of the fleshy fibres of its coats; by all which deglutition, or swallowing, is performed.

The œsophagus.

Pharynx.

The trachea arteria, or wind-pipe, is the passage from the mouth to the lungs. The upper end of it is called the larynx; it lies below the root of the tongue, before the pharynx; it is composed of five cartilages, the first called scutiformis or thyroides, the second cricoides or annularis, the third and fourth arytnoides; these make the rimula called the glottis: the fifth is the epiglottis; this covers the glottis or mouth of the larynx, so that none of the aliments may descend through the trachea in eating and drinking. The tube of the trachea is composed of annular cartilages, which are at small and equal distances from one another.

The trachea arteria.

Larynx, its cartilages.

Its use.

another. The hind parts of these cartilages are membranous, for the conveniencies of the œsophagus, which lies along that part. The use of the larynx is to form and tune the voice, and of the trachea to convey air to and from the lungs. This brings us to the middle cavity, in which we first meet with

Of the lungs.

The lungs; they are divided into two lobes by the mediastinum; they are tied to the sternum before, and to the vertebræ behind. The trachea divides into several branches as it enters the lungs; which branches, and their subdivisions, are called bronchi; the cartilages of the bronchi are perfectly annular; the extremities of these branches open into the cavities of an infinite number of vesicles disposed like bunches of grapes upon them: these make the peculiar substance of the lungs. In the dilatation of the thorax, the air rushes into the said vesicles, and distends the lungs; this we call inspiration: but the cavity of the breast being straitened, compresses the lungs, and expels the air again, which is called expiration. These two alternate actions are the office of the lungs, and absolutely necessary to life.

Inspiration.

Expiration.

Their office.

Of the heart.

The heart is the next, and the noblest organ of animal life: its situation has been said, its form is well known, its substance is of muscular flesh; for the heart is a muscle of various orders of fibres, by which means it is capable of contraction and dilatation. In the heart are two large cavities called ventricles, the right and the left; above each of these is an auricle or little ear; in the right auricle opens the vena cava, and the vena pulmonalis in the left. The arteria pulmonalis arises from the right ventricle of the heart, and the aorta or great artery from the left ventricle. In the dilatation of the right auricle the blood rushes in from the vena cava, which, by its contraction, is thrust into the right ventricle, which, by its contraction, drives it into the pulmonary artery, by which it is circulated through the lungs, and then returned by the pulmonary vein into the left auricle, and from thence into the left ventricle, which, in its contraction, forces it into the trunk of the aorta, which carries it to all parts of the body; from whence it is returned by the veins to the right auricle. And thus by an

Its auricles and ventricles.

The circulation of the blood.

alternate.

alternâte dilatation and contraction (called the diastole and systole) of the auricles and ventricles of the heart, the circulation of blood is effected, which is the proper function of the heart.

Diastole and
systole.

The thymus is another viscus of the thorax; it is a conglobate gland situated just under the claviculæ, is large in infants, but grows less as they grow older. Its use is supposed to be for a diverticulum to the chyle in the thoracic duct of a fœtus.

Of the thymus

The breasts are the last parts observable about the thorax; they are situated on the external part, one on each side. Their substance is composed of a great number of glands of an oval figure, which lie in a great quantity of fat. Their excretory ducts, as they approach the nipple, join and unite, till at last they form seven, eight, or more small pipes called tubuli lactiferi, which communicate by several cross canals, and all terminate in the extremity of the nipple, where they pour out the milk, separated by the glands, in suction.

Of the breasts,

The viscera, or bowels of the third or lowest cavity, called the abdomen, now come to be described. When the common integuments and the peritonæum are laid open, the first thing that presents itself to view, is

Of the viscera
of the abdomen.

The omentum, or cawl; this is a delicate and fine double membrane, interlarded with a great deal of fat, and, like a bag, contains and covers the greatest part of the intestines. It is connected to the liver, spleen, duodenum, colon, and bottom of the stomach. Its use is to contain and cherish the intestines with gentle warmth, and thereby promote digestion in the stomach, and help the concoction of the chyle in the guts; to lubricate and facilitate their peristaltic motions, and to sustain the vessels which go from the spleen to the other viscera.

The omentum

The stomach is situated just under the midriff, is of a long, wide, and roundish figure. It hath two orifices; by the left, called cardia, it is joined to the œsophagus; and by the right, called pylorus, it is united to the first of the intestines. It is made of four coats; the external one is common, the second is muscular, being made of strait and circular fibres;

Of the stomach.
Pylorus.

the

Digestion. the third is fine, thin, and wholly nervous; the fourth, and inmost, is full of plaits and wrinkles, in which are a great number of glands, which separate a liquor which besmears the cavity of the stomach, and helps digestion. The stomach receives the aliments by the œsophagus, which by the action of its muscular coat, and fermenting juices, are separated, dissolved, and reduced to a white liquid substance, called chyle, which is then protruded through the pylorus into the intestines; and this is called digestion, which is the proper office of the stomach.

Chyle.

Of the intestines.

Small and great guts.

Of the mesentery.

Venæ lactææ.

Vasa lymphatica.

Receptaculum chyli.

The intestines, or guts, are a long and large pipe, which reaches from the pylorus to the fundament in various circumvolutions and turnings. They are knit all along to the edge of a membrane called the mesentery. They are composed of three coats, of which the first is common, the second is made of strait and spiral fibres, and the third and inmost coat is rugous, or full of plaits, called *valvulæ conniventes*, which retard the progress of the fæces. This tube is divided into three small and three great guts; the small ones are the duodenum, the jejunum, and the ileum; the great ones are the cæcum, the colon, and the rectum, the extremities of which make the anus at the fundament. The chyle entering the duodenum, hath its fine nutritive parts absorbed by the orifices of the lacteal veins, and the remainder is, by the peristaltic motion of the guts, gradually conveyed forward to be ejected by the body as useless excrements or fæces.

The mesentery is that membrane which hath the guts connected to its circular edge, to prevent their entangling one with another; it is tied to the three first vertebræ of the loins; upon it run the venæ lactææ, or lacteal veins, which imbibe the chyle from the small guts; as also the vasa lymphatica, or lymphatic vessels. By these two sorts of vessels the chyle and the lymphæ are carried to the several vesicular glands of the mesentery, from which go lacteals of a larger size, and carry the chyle to the receptaculum chyli, which seems to be only a bag formed by the union of lacteals and lymphatics: it is situated between the great artery and vertebræ of the loins. From thence the chyle, diluted with the lymphæ, is conveyed

veyed in a tube through the thorax (which therefore is called the thoracic duct) and then up the neck; Thoracic whence it is conducted to the left subclavian vein, duct. into which it is discharged by one or two orifices, where it mixes, and is made to circulate with the mass of blood, for the nourishment of the body.

The pancreas, or sweet-bread, is a large gland of the pancreas. the conglomerate sort; it lies across the abdomen, reaching from the liver to the spleen; its glandulous substance separates a liquor called the pancreatic juice, which is conveyed by a duct to the duodenum, in Its use. order to dilute the chyle, that it may the more easily enter the mouths of the lacteal vessels.

The liver lies in the right hypochondrium; it is Of the liver. almost round, and pretty thick, convex on its upper side, and somewhat concave on the under; its fore part is divided into two, where the umbilical vessels enter it. The substance of the liver is glandulous, which separates the gall from the blood brought thither by the vena portæ, which is then carried to the vesica Vesica fellis. fellis, or gall-bladder; from hence goes a duct called the ductus cysticus, which joins another from the liver called the porus bilarius, in which the bile is found; Porus bilarius. these two ducts uniting, form one called ductus communis choledochus. By this the gall or bile is carried Bile, its use. also to the duodenum, to be mixed with the chyle, in order to blunt or sheath its acids, that it may be so far attenuated as to be meetly diluted by the pancreatic juice.

The spleen is situated in the left hypochondrium; Of the spleen. between the ribs and the stomach it is tied to the peritonium diaphragm, and omentum; it is of a lead colour, and an oblong figure. The substance of the spleen is composed of an infinity of membranes, which form little cells and cavities of different figure and bigness, always full of blood. It is supposed to be a reservoir or diverticulum to the arterial blood in passing to the liver for the secretion of the bile.

The kidneys are two, one on each side; the right Of the kidneys. is under the liver, the left under the spleen; their figure is well known. The kidneys are glands of the conglomerate kind, consisting of an infinite number of little glands, of a roundish figure, in its outer substance,

Their use.

substance, which secern the urine from the blood brought to them by the emulgent arteries. The urine is conveyed by small tubes, uniting in their progress, and forming larger bundles, whose extremities pierce and discharge it into the pelvis or basin, which is a cavity formed by the dilatation of the ureters, which are long, slender, and membranous tubes, that carry the urine from the kidneys to the bladder, one on each side: they are obliquely inserted near the neck of the bladder.

Ureters.

The renal glands.

Just above the emulgent vessels are situated two bodies, one on each side, called *capsulæ atrabiles*, or *glandulæ renales*, the renal glands, wrapt up in some fat; they are often of different figure, are biggest in a foetus, and their use is not yet known.

Of the bladder.

The bladder is situated in the duplicature of the peritonæum, in the lower part of the abdomen. It is tied to the navel by the *urachus* degenerated into a ligament. It is composed of three coats; the first is common, the second muscular, the third is full of wrinkles, and is both glandulous and nervous. It has a constrictive muscle around its neck, called *sphincter vesicæ*, which prevents the urine from running out continually. When the bladder is full, the urine is, by the muscular power of the second coat, expelled the body through the urethra, into which the bladder opens.

Its sphincter.

Of the parts of generation in men.

We are now arrived to the parts of generation, which we shall give a short account of in both sexes; and first of those in men.

Spermatic arteries.

The parts serving to generation in men are the following: (1.) The spermatic arteries, which arise from the aorta, a little below the emulgents, and carry the blood to the testicles for the seminal secretion. (2.) The spermatic veins; these carry the blood back again to the vena cava. In their progress, a little above the testes, they divide into several branches, which make various anastomoses, till they come near the abdomen, where they all unite into one trunk, and from their shape are called *corpora pyramidalia*: these veins and arteries together are called the *vasa præparantia*. (3.) The testes, or testicles; their substance is vascular, or composed of infinite plexus

Spermatic veins.

**Corpora pyramidalia.
Testes.**

or convolutions of the fine branchery of the spermatic vessels; they are two in number, and are contained in a common integument, like a purse, called the *scrotum*; and each testicle hath two proper coats, the outermost called *tunica vaginalis* or *elythroides*; the other is called *albuginea*, because of its white colour. The testes are suspended in the *scrotum* by the *cremaster* muscle, which draws them up in coitu. (4.) The *epididymis*, which is a body formed on the upper part of each testicle, by the several windings and intervolutions of a fine tube, which receive the semen immediately from the testes. (5.) The same tube or canal, continuing or ascending from the extremities of the *epididymis*, form the *vasa deferentia*: these enter the abdomen, and proceed with the semen to (6.) The *vesiculæ seminales*, which are two in number, one on each side, on the under part of the neck of the bladder. In these vesicles the semen is repositied till the time of coition, when it is again received by the *vasa deferentia*, and carried through the substance of (7.) The *prostatæ*, or *corpus glandosum*, whose glands separate a clear mucilaginous humour, which in coitu is carried into the urethra, at the same place where the semen is also discharged from the *vasa deferentia* at the same time. (8.) The penis or yard, whose substance is composed of two spongy bodies called *corpora cavernosa*, which arise distinctly from the lower part of the os pubis, and terminate at the extremity of the penis in the glans, which is always kept soft, moist, and very sensible, by a kind of hood called *præputium* or fore-skin, made by a reduplication of the skin of the penis. On the under side of the penis, or the *corpora cavernosa*, there runs a pipe called the urethra, through which the urine is discharged from the bladder, and the semen injected into the womb in the act of generation.

Scrotum.

Epididymis.

Vasa deferentia.

Vesiculæ seminales.

Prostatæ.

Penis.

Corpora cavernosa.

Glans.

Præputium.

Urethra.

The parts of generation in women.

Vagina.

Nymphæ.

In

The parts subservient to the same purpose in women are, (1.) The vagina, the external orifice of which is the pudendum, the two labia of which in adults are covered with hair. The soft protuberance above is called *mons veneris*. Immediately within the labia are, (2.) The *nymphæ*, one on each side; they resemble the red membranes under the throats of pullets.

- In the angle of the vulva, next the pubis, is the extremity of (3) The clitoris, which is in shape and parts much like the penis in men, but much less; it is also erected, and becomes the seat of pleasure in acts of venery. (4.) The hymen; it is a circular folding of the inner membrane of the vagina; which, being set across the passage, is broke at the first embrace, and its fibres contracting in three or four places, form what they call the glandulæ myrtiformes. (5.) In this part of the pudendum muliebre opens the orifice of the urethra. (6.) In the passage of the vagina opens the orifices of numerous excretory ducts from glands within the inner membrane; they are called lacunæ; they pour forth a viscous liquor for increasing titillation. (7.) The womb or matrix; it is joined to the vagina, which communicates with it by a small orifice. The figure of the womb is like that of a pear; it is situated between the bladder and strait gut: its substance is composed of fleshy fibres of a muscular nature, which render it capable of great dilatation and contraction: it is tied by two sorts of ligaments called ligamenta lata, or broad ones; and ligamenta rotunda, or round ones; two of each. (8.) The spermatic arteries and veins spent on the ovaria, womb, and vagina. (9.) The ovaria or testicles, which are near half as big as those in men, but are flattish and smooth before conception. (10.) The tubæ fallopianæ are situated one on each side the womb; they arise from its bottom by a narrow beginning, and dilate towards the extremities in form of a trumpet, where they contract into a small orifice; from whose circumference they dilate into a broad jagged membrane called morfus diaboli. These are the parts of generation in women.
- Clitoris.**
- Hymen.**
- Urethra.**
- Lacunæ.**
- Womb or matrix.**
- Spermatiks.**
- Ovaria.**
- Tubæ fallopianæ.**
- Morfus diaboli.**
- Of angiology.** We are now come to Angiology, the third great part of sarcology; and this comprehends three other subdivisions, viz. (1.) Neurology, or the doctrine of the nerves. (2.) Arteriology, or the arteries; and (3.) Phlebotology, which treats of the veins. A little of each of these in brief must suffice. And first of
- Neurology.** Neurology, which describes the nature, number, uses, &c. of the nerves of the human body. A nerve is a long and small bundle of very fine pipes, or hollow fibres,

fibres, wrapt up in the dura and pia mater; which last not only covers them all in common, but every fibre in particular.

The origin or beginning of all the nerves is from the medullary substance of the brain and spinal marrow: they generally arise by pairs, viz. ten pair which come out of the scull, and thirty from between the vertebræ of the back bone.

The ten pair of nerves which arise from the brain, and come out of the scull, are as follows: (1.) The olfactory nerves; they arise from the fore part of the basis of the brain, pass through the holes of the os cribriforme, and are spread upon the os spongiosum in the nostrils. (2.) The optic nerves; they proceed from the corpora striata and thalamus nerv. opt. through the foremost holes of the os sphenoides into the orbit of the eye, where they spread upon the glassy humour of the eye. (3.) The motores oculorum; they arise from the medulla oblongata, and are spent chiefly on the coats and muscles of the eye. (4.) The pathetics, which pass through the foramina lacera, are wholly spent on the muscle of the eye called the obliquus major. (5.) The fifth pair are the largest of the brain, and each divides into three other branches, which are spent on the muscles and parts of the face, mouth, &c. (6.) The sixth pair is a small one, wholly spent on the abducent muscle of the eye. (7.) The auditory nerves; these pass the holes of the os petrosus, and are partly spent on the internal cavity of the ear, and partly on the external ear, and other parts of the mouth and face. (8.) The par vagum; it goes down the neck, together with the accessory nerve, and dividing into various branches, are spent on the viscera and other parts of the thorax, &c. (9.) The gustatory nerve; it passes out of the occipital hole, and is distributed in the body of the tongue. (10.) The tenth pair is spent principally on the oblique muscles of the head.

Their origin.

The nerves of the brain.

Olfactory nerves.

Optic nerves.

Motores oculorum.

Pathetics.

Fifth pair.

Sixth pair.

Auditory nerves.

Par vagum.

Gustatory nerve.

Tenth pair.

The nerves of the medulla spinalis.

Of the thirty pair of nerves from the medulla spinalis, (1.) Seven pair come out betwixt the vertebræ of the neck, and are chiefly spent in numerous branches on the muscles, &c. of the head, neck, and arms. (2.) Twelve pair from the vertebræ of the back, of which

which the first goes to the arm, the last to the muscles of the abdomen, and the rest to the intercostal, &c. muscles of the ribs and vertebræ. (3.) Five pairs from the vertebræ of the loins; these furnish the muscles of the lower belly, the inguen, the yard, &c. with a number of branches; but the trunk of the third and fourth join and make the anterior nerve of the thigh; the last also enters the thigh. (4.) Six pairs come out of the vertebræ of the os sacrum on the fore-side. The first four pairs give some twigs to the parts in the basin; but their great branches, with the last, and a branch of the fourth of the loins, make the sciatic nerve, which goes down the hinder part of the thigh to the leg and foot, and is the largest nerve in the body. The fifth and sixth are small, and dispersed on the bladder, sphincter, and privy parts.

The use of
the nerves.

The use of the nerves is to convey the animal spirits, separated from the blood in the brain and spinal marrow, to all the parts of the body, as being the supposed organs which convey to the mind the impressions made on any part, and thus effect what we call sensation.

Arteriology.
Arteries,
what.

Arteriology exhibits a view of the doctrine of the arteries, which are those tubes or canals that convey the blood from the heart to all parts of the body. Each artery is composed of three coats, of which the middle one doth consist of spiral fibres, which render it very elastic and contractile, and is the cause of pulsation in the arteries.

The aorta.
Coronariæ.

The great arterial trunk, whence all the larger branches proceed, arises from the left ventricle of the heart, and is called the aorta: it sends out two small branches to the heart itself, called coronariæ; after this it ascends a little, and then turning downwards, forms the descending trunk of the aorta. From the upper side of the crook it sends out three branches; two on the left side, viz. the subclavian, and one carotide; and one on the right side, viz. the right subclavian, from which arises the right carotide artery.

Subclavians.

The subclavian arteries on each side send out the mediastinal and mammary branches to the breasts, the cervical to the neck and head; and then the subclavian

subclavian passing the musculus scalenus, goes to the arm, and is called the axillary artery. The carotide arteries ascending the neck, furnish all the parts of the head and brain with proper branches.

Carotides.

The descending trunk of the aorta sends out first the bronchial to the lungs, then the intercostal arteries in the thorax; to the diaphragm it gives the phrenic branch; and entering the abdomen it sends out the cæliac, which divides into two branches; one to the right, which gives the gastric to the stomach, the cystic to the gall-bladder, the epiplois to the omentum, &c. the other to the left, which sends the splenic to the spleen, &c. Then the aorta sends out the mesenteric to the mesentery, the adiposæ to the renal glands, the emulgentes to the kidneys, the spermatics to the testicles, the lumbares to the muscles of the loins. Here it divides into two large trunks called the iliac arteries; each of which is again divided into the external and internal iliac. The internal sends branches to the parts in the pelvis, the pudenda, and muscles of the abdomen, thighs, &c. The external iliac, leaving the cavity of the abdomen, sends out the epigastric to the musculus rectus, and the pudenda to the privities; then going down the thigh and leg, it is called the crural artery, which spends itself in various branches on the muscles thereof. So much for the arteries; next

Descending trunk of the aorta, and its branches.

Phlebotomy teaches the doctrine of the veins, which are only a continuation of the extreme capillary arteries, which is what the anatomists call the anastomosis of the veins and arteries. They return the blood to the heart in numberless branches, which, uniting as they approach it, form at last three large trunks of veins, viz. the cava descendens, which brings the blood back from all the parts above the heart; the cava ascendens, which returns it from all the parts below the heart; and the vena portæ, which carries the blood to the liver for the secretion of the bile.

Phlebotomy.
Veins, what.
Anastomosis.

Vena cava.

Vena portæ.

The chief branches of the veins correspond to those of the arteries, as coming from the same parts to which they go, and have therefore the same names in general; as the subclavians, the carotides or jugulars, the cervicals, mammaries, axillaries, emulgentes, spermatics, iliac, &c. with some few having proper names.

Veins have no pulsation, and why.

The coats of the veins are of course the same with those of the arteries; only the muscular coat is as thin in all the veins as it is in the capillary arteries, and consequently there is not that elasticity and contractive power in these as in them; nor is there any pulsation, because the blood enters the veins in a continued even stream, and moves from a narrow channel into a wider, and so does not press against the sides of the veins as against those of the arteries.

The valves.

The veins perpendicular to the horizon, as also other ducts, as the lymphatics, the thoracic duct, &c. have thin membranes or valves placed in their cavities, which open with the course of the blood or fluid, and give it a free passage; but are closed by the reflux blood, and so hinder its regress. Such is the admirable providence of nature in all her handy-works!



OF PHARMACY, or the Art of Compounding MEDICINES.

PHARMACY is the art of making medicines; Pharmacy defined. and it hath been usually distinguished into two kinds, Chymical and Galenical. Chymical pharmacy is the art of making and procuring medicines by the operations of chymistry, or the action of fire on natural bodies, resolving and reducing them to their simple constituent parts, as spirits, oils, salts, &c. But the Galenical pharmacy is that which prepares medicines, after the method of Galen, in a more gross manner from the whole substance of vegetables; and not only so, but also compounding the various parts of the same plant, and likewise of divers plants together, to answer the intentions of physic. Galenical.

The business of making medicines of the Galenic kind is called Pharmacopœia, and he who actually performs it is called Pharmacopœius, or, vulgarly, an apothecary: but he is also called Pharmacopola, from his selling or vending of medicines. Moreover, the weighing and measuring out proper quantities of ingredients for a compound medicine is called dispensation; and a book containing rules directing such quantities is called a dispensatory; as that of the College, Quincy, and others. Lastly, those simples which are used in the shops, and the compound medicines made of them, are called officinal simples and compositions. Pharmacopœia, what. Pharmacopola. Dispensatory.

The weights which the apothecary useth in making and compounding his medicines, with the characters by which they are represented in prescriptions and books, are as follows: lb , a pound; ℥ , an ounce; ℥ , a dram or drachm; ℥ , a scruple; gr , a grain; ss , half of a thing; M , an handful; P , a pugil, one eighth part of an handful; $\text{P. } \text{Æ}$, equal quantities; q. s. a sufficient quantity; S. A. according to art; Cong. a gallon; Cochl. a spoonful. And in regard of
C c 2 numbering,

numbering, instead of figures they use the numerical letters; as, i, ii, iii, iv, v, &c. for 1, 2, 3, 4, 5. Thus \mathfrak{z} i, \mathfrak{z} ii, \mathfrak{z} iii, &c. signifies 1, 2, 3, ounces: and \mathfrak{ss} , or \mathfrak{z} ss, is half a pound, or half an ounce.

Abbreviatures

Again, in prescriptions to the shop, R signifies recipe, or take; \bar{a} , of each; m. mix; f. m. make a mixture; f. make; h. m. medicinal hours; h. f. the hour of sleep, or going to bed.

A table of apothecaries weights is as follows.

Twenty grains, gr. xx.	} make {	\mathfrak{z} i. One scruple.
Three scruples, \mathfrak{z} iii.		\mathfrak{z} i. One drachm.
Eight drachms, \mathfrak{z} viii.		\mathfrak{z} i. One ounce.
Twelve ounces, \mathfrak{z} xii.		\mathfrak{lb} i. One pound.

Also one cochl. or spoonful is about \mathfrak{z} ss, or half an ounce; and one cong. or gallon is \mathfrak{lb} viii, or eight pounds.

Official simples.

Official simples are all the parts or subjects of the three kingdoms of vegetables, animals, and minerals, that are used in the shops for making compound medicines. Of these, vegetables make the substance of the Galenical pharmacy which we here treat of; animals and minerals being referred to the Chymical. Vegetable simples are distributed, by dispensatory writers, into herbs, flowers, barks, roots, and seeds; to which may be added the several gums or inspissated juices of some plants.

Rules to be observ'd concerning herbs,

Concerning the gathering and preservation of these simples, it is requisite to observe the following rules or maxims. As concerning herbs: (1.) They are of the greatest virtue when beginning to flower, and therefore should be then gathered. (2.) They should be gathered when they are perfectly free from rain or dew, or they will turn black in drying. (3.) They ought to be dried in the shade, for too great heat exhales their moisture, and diminishes their beautiful verdure; &c. (4.) The fresher they are brought into use the better; though some may be kept much longer than others. (5.) So long as the fresh colour they are dried with continues, they may be esteemed good in medicine, but no longer. (6.) They are much better for decoction and distillation when dried than green; because

because their saline and volatile parts will not well mix with a menstruum, till their native phlegm or water be evaporated.

Concerning flowers, observe (1.) That they also be gathered dry. (2.) They should be gathered when they are full blown, unless such as are ordered to be used in the bud; as red roses for conserves, &c. (3.) They are better dried in the sun than in the shade; because the quicker they dry, the better they preserve their scent and colour. (4.) They must be carefully kept so as not to grow musty, and the closer the better. (5.) If they seem to give, they must be exposed again to the warm sun; and two or three such airings will prevent that fault for the future. (6.) They lose in a great measure their virtues with their scent and colour, and therefore should be kept no longer than these endure.

Seeds should be gathered dry, and when ready to shed. Fruits are best when full ripe, unless such whose efficacy depends upon the austerity of their juices, and such not quite ripe are the better.

Roots are best taken up in the beginning of the spring, for reasons obvious to all.

Barks are the better for being fresh dried, though many will keep a long time without perceptible decay; and the same holds true of woods of all kinds.

Gums, and inspissated juices, are the better the freer they are from dross and mixture; but are seldom fit for use.

Of these simples are made and compounded the various officinal medicines, or those that stand ready prepared for use in the apothecary's shop. Of these there are several kinds, under various forms, and made in different manners. As (1.) Waters. (2.) Spirits. (3.) Oils. (4.) Decoctions. (5.) Infusions. (6.) Syrups. (7.) Honeys. (8.) Juices. (9.) Wines. (10.) Tinctures. (11.) Elixirs. (12.) Conserves. (13.) Sugars. (14.) Confections. (15.) Electuaries. (16.) Troches. (17.) Pills. (18.) Powders or species. (19.) Balsams. (20.) Ointments or unguents. (21.) Cerates. (22.) Plaisters: with some other forms; besides those of extemporaneous prescription; all which

I shall treat of in order, shewing their nature, and the manner of making them.

Of officinal waters.

Simple water, what.

The officinal waters are of two sorts, simple or small, and compound or strong waters. A simple water is that which is drawn from any particular sort of plant by itself by a cold still. It is designed to draw out the virtues of any herb, flower, seed, root, &c. which may be more conveniently given in that form than any other. They answer but very slight purposes in medicine, being able to affect no parts but the nerves and animal spirits: and consequently none are of value but those which are drawn from the aromatic class of vegetables, or which yield a notable scent or taste; and even these waters are seldom used but as vehicles to things of greater virtue.

Simple waters are thus made:

How made.

Take a proper quantity of the proposed vegetable, fresh gathered and whole, and commit it pure and without mixture to the cold still, where let it be kept for a long time in a mild and gentle heat, not exceeding that of the summer's sun, by means of a soft well regulated fire; which forcing off the vapour, or volatile part of the plant, it is condensed by the large pewter head, and trickles down the sides thereof into a proper vessel placed at the end of the rostrum to receive it.

Compound water what, and how made.

Compound or strong waters are such as are drawn from a composition or mixture of vegetable substances infused in spirits, drawn off with an alembic. I shall give an example in making the compound bryony water.

Take juice of bryony roots ℥vi. leaves of rue, mugwort, of each ℥ii. savin m. iii. feverfew, catamint, pennyroyal, of each m. ii. basil, dittany of Crete, of each m. iſs. orange peels ℥iv. myrrh ℥ii. castor ℥i. Infuse all in spirit of wine ℥viii. and after proper maceration, raise a moderate and regular fire to draw it off.

Distilled spirits.

Distilled spirits differ little in the manner of making from the compound waters, and indeed are nearly allied in their natures also; as will appear from the following example of the spirit of castor.

Take

Take the best Russia castor ℥iv. flowers of lavender ℥i. sage, rosemary, $\text{ā } \text{℥ss.}$ cinnamon ℥vi. mace and cloves, of each ℥ii. spirit of wine ℔vi. Digest and draw off the spirit in a retort with a sand heat.

Of oils there are several sorts, as may be seen in the chapter of Chemistry. I shall only here take notice, Of oils.

that the officinal pharmacy hath to do only with simple and compound oils, either by expression, or by decoction and infusion. Simple oils by expression are obtained from the most oily parts of vegetables, which are dried, to the intent that as much of their acid and water may fly off as possibly can, and then the remainder is well bruised and put to a strong press, that being worked forces out the oil. Thus the oil of sweet almonds is expressed from the kernels; and thus oils are to be made from the kernels of most fruit. Oils by infusion are made by taking a quantity of the proper parts of the proposed vegetable, and bruising the same; it is set to macerate in a quantity of some sort of oil for the space of a week, then it is simmered in a bath-heat, and the oil pressed out; after which the vegetable is put into it afresh, and managed in the same manner as before; and the operation repeated a third time. The composition is to stand about forty days, and then the oil is set by for use, without pressing out the plant. Simple oils.

In making compound oils, there are taken several Compound sorts of herbs, &c. of a like quality, which are to be sorts. macerated together in wine and oil for some days, and then boiled over a gentle fire till the wine is evaporated, and then the oil is strained off and kept for use. For example, take the compound oil of costus.

Take of the bitter costus roots ℥ii. of cassia wood ℥i. tops of marjoram ℥viii. Grossly bruise them together, and macerate them for two days in ℥xii. of aromatic white-wine, and then with ℔ii. of olive oil washed in white-wine, let them be boiled to the consumption of the wine S. A. then let the oil be strained off for use.

Infusion is that part of pharmacy whereby the Infusion. virtues of plants, roots, flowers, &c. are drawn out by letting them steep only in some convenient men-

struum; and this is concerned in bodies of a laxer texture than those which require the next operation or decoction, and whose parts are so light as not to admit of a greater motion without danger of flying away in vapour. Take for an example the infusion of fena.

Take of Alexandrian fena \mathfrak{z} iss. of the lesser cardamon seeds \mathfrak{z} ij. salt of tartar \mathfrak{z} iii. Pour upon them \mathfrak{lb} i. of boiling water, and strain out, when cold, for use.

Decoction.

Decoction is that process by which the virtues of vegetables are drawn out in boiling them over a gentle fire in water, or some proper menstruum; and thus the decoction or apozem is more fully impregnated and saturated with those parts of the subject that are more readily soluble in boiling water. The closer, denser, and heavier any subject is, and the more oil or resin it contains, the less it is fit for decoction; and therefore such require to be kept a good while in a state of digestion, to prepare them for this operation; wherein also they must be the longer detained before they will give out their oil. For example, take the form of the common decoction for clysters.

Take of the leaves of mallows, violets, pellitory of the wall, beets and mercury, of each \mathfrak{m} . i. of camomile flowers \mathfrak{P} . ii. of sweet fennel seed \mathfrak{z} ss. of linseed \mathfrak{z} ii. and boil in a sufficient quantity of water to yield a pint when strained.

Of syrups.

Syrups are forms of medicines well known, being the juices, decoctions, &c. of herbs and drugs boiled up with sugar to a proper consistence; and therefore nothing should be brought into this form but what is conveniently drawn out by decoction, as an aqueous menstruum, or the expressed juices of plants, fruits, &c. for any volatile or spirituous substances will either be lost in making, or not long continue in the composition. The more, likewise, any thing is disposed to fermentation, the less it is fit for this form; and therefore the juices of fruit soonest decay in syrups. Such ingredients, therefore, whose virtues consist in their most solid, permanent, saline, and terrestrial parts, and so may be drawn out by an aqueous medium, are the only subjects of this class or form of medicines.

And

And of so small consequence is any syrup, that their chiefest use and efficacy is that of sweetening juleps; and even for that intention plain sugar has got the preference in the present more honest practice. Here follows an example of making the syrup of citron-peels.

Take the outer yellow citron-peels full ripe and fresh $\mathfrak{z}\text{v}$. kermes berries, or the imported juice thereof $\mathfrak{z}\text{ii}$. spring water $\mathfrak{lb}\text{iii}$. Steep them together all night in a bath-heat, and to the strained liquor put $\mathfrak{l}\mathfrak{i}\mathfrak{ss}$. of fine sugar, and with a moderate heat boil up to the consistence of a syrup.

After this manner are prepared syrups from the peels of oranges, lemons, &c.

Honeys are made either by mixing the flowers of a plant with honey clarified, or else by boiling the juice of the plant and honey together to a due consistence.

There is a form called a rob or sapa, which is when a decoction of the juices of plants and sugar is evaporated till one half is consumed: but if the said decoction be exhaled away to a third part, the remainder is called defurtum.

When it is evaporated to that consistence, that a drop let fall on a cold marble will there congeal so as to tremble when it is touched, or shook, it is called a jelly; though this word be sometimes applied to the fresh juices of fruits and plants, and to some broths of animal substances.

Lastly, when a decoction is so far exhaled away, that it acquires the consistence of stiff honey, or will not stick to the fingers when cold, it is called an extract; and this is of two sorts, viz. the aqueous and the resinous; the first being made with water, the other with spirits of wine; but both of them are saline, fat, bitter substances, and always appear of a very black colour.

The inspissated juices of plants are made by bruising the plants when young and fresh, and expressing their juices, which are to be boiled and exhaled to a due consistence.

Medicated wines are made by only infusing or digesting proper subjects in common wine, as may appear by this example of the steel wine.

Take filings of steel $\mathfrak{z}\text{i}$. saffron in powder $\mathfrak{z}\text{ii}$. mountain wine $\mathfrak{lb}\text{i}$. Let them stand in infusion three

How made.

Of honeys.

Rob or sapa.

Defurtum.

Jelly.

Extract.

Inspissated juices.

Medicated wines.

three days, frequently shaking them, and then filter and keep for use.

Tinctures.

Tinctures, in like manner, are made by digestion of ingredients in strong liquors or spirits; which being saturated with the virtues thereof, are strained or drawn off by a gentle heat. As for instance, in the tincture of rhubarb:

Take of rhubarb \mathfrak{z} iss. of the lesser cardamom seeds and saffron \mathfrak{a} \mathfrak{z} ii. of liquorice roots \mathfrak{z} ss. of French brandy \mathfrak{lb} i. Digest them eight or ten days, and decant off the tincture for use.

Elixirs.

An elixir is a form of medicine made by strong infusion, where the ingredients are almost dissolved in the menstruum, and give it a thicker consistence than a tincture. This form shall be exemplified in the elixir of life, as follows.

Take nutmegs, mace, cinnamon, \mathfrak{a} \mathfrak{z} i. cloves \mathfrak{z} ss. the outer rinds of oranges and citrons, \mathfrak{a} \mathfrak{z} iii. saffron \mathfrak{z} ii. Digest all together in a sand-heat in \mathfrak{lb} iii. of rectified spirits of wine for some days, and pour off the clear part for use.

Conerves.

Conerves are a well-known composition in the shops; it is a form contrived to keep and preserve the herbs, flowers, peels, roots, or fruits, of vegetable simples, as near as possible to what they were when fresh gathered; and this is done by beating them up in a marble mortar with triple the quantity of loaf sugar, till the particles of the simples are so blended with the sugar, that they cannot be distinctly discerned. But for those simples which are less moist or succulent, a double quantity of sugar will do; and for some fruit, and their pulps, yet less will serve. These, like syrups, answer no more important intentions than mixing with, and rendering palatable other things of real efficacy.

Sugars.

Sugars, rather a part of the confectioner's than apothecary's art, are either simple or compound. Simple lozenge sugar is made by pouring sugar which has been sufficiently boiled with half its quantity of damask rose water, on a marble; and there, when cold, cut into tablets or lozenges. Compound lozenge sugar is made by mixing a composition of ingredients in species with

with the sugar, which is brought to a proper consistence, and made into tablets, as before.

A confection is a sort of medicine compounded with dry ingredients of many kinds, which are proper to be given in substance, being mixed and made into a consistence that will not presently run, with honey or syrup. Thus, for example, the confection of kermes is made. Confections.

Take the best scented rose-water ℥ii. the juice of kermes berries ℥iiii. of the whitest sugar ℔i. Boil them almost to the consistence of honey; and then stir in the powders of the best cinnamon and aloes wood, ā ʒvi. and make them into a confection, S. A.

An electuary is little different from a confection, being made of conserves, powders, species, &c. into the consistence of honey, or the pap of a roasted apple, to be made into boles upon occasion. When this form of medicine is too thin, it is apt to ferment; and when too thick, it is apt to candy; and both these inconveniencies alter and impair the virtues of the ingredients; and therefore it is a little to be wondered at that confections or electuaries should be so much in use, while other forms infinitely superior in all respects lie neglected, or unthought of, says a learned and judicious author. Take an example of the form in the composition of the pectoral electuary, as follows. Electuaries.

Take the juice of liquorice and of sweet almonds, ā ʒss. of pine leaves ʒi. of hyssop, maiden hair, Florentine orrice, nettle seeds, and round birthwort, ā ʒifs. seeds of cresses, and elicampane-root, ā ʒss. of honey ʒxiv. and make them into an electuary.

Troches or lozenges are a form of medicine not so much in use in the modern as in the antient practice. It seems designed to preserve in readiness for present use, substances which stood in need of some preparation, in powdering, &c. and which by lying in dry powder would likewise be subject to decay sooner than in this form. The composition consists in various ingredients reduced to powder, and worked up into a paste with mucilages or other viscous substances, which is rolled out thin like a pancake, and then with a proper Troches or lozenges.

proper instrument it is cut out into troches or lozenges; which are to be held and dissolved in the mouth to answer the intentions of balsamics and pectorals. The method of making the white troches of rhases is thus exemplified.

Take of cerufs washed with rose-water 3x. of far-cocolla 3iii. of starch 3ii. of gum-arabic and tragacanth ā 3i. of camphire 3fs. and make them into a paste with rose-water, to be cut into troches.

Pills.

Pills are a composition of divers ingredients reduced to powder, and made into a hard paste or mass, with a quantity of syrup; and is of that special consistence, that when, on any occasion, a small part of it be taken and worked up into a small round ball or pill, it shall be able to retain that form and consistence without alteration. This composition in the shops contains now but little besides what is of a cathartic intention; alteratives requiring more room than here is allowed for a dose, which is generally five or six pills, whereas they would require fifteen or twenty for a dose. Nothing should enter this form that is solvable in air, as some salts; or apt to ferment, as volatile salts, &c. You have a proper example of making this kind of medicine in the greater pill cochixæ, as below.

Take of hiera-picra 3x. of the troches of alhandal 3iiifs. of diagyridium 3iifs. of the most resinous turpeth 3v. and make them into a consistence fit for pills, with a sufficient quantity of syrup of buckthorn, S. A.

Powders.

Powders, or (in some cases called) species, are well enough known without description. It is true that powders and species did originally signify different things; for powders were a composition of divers ingredients reduced to that form; but species was a word appropriated to those simple ingredients out of which others more compounded were made; and even now custom has, without any just propriety, affixed it to some aromatic and cathartic powders, which are compositions of various things; as species diambrixæ, &c. Drugs and simples are reduced to powder by a twofold operation, viz. pulverization, which is a beating and pounding of dry ingredients together in a mortar, till they

Pulverization.

they are entirely reduced to a dust or fine powder. And secondly, levigation, which is a grinding hard, Levigation. ponderous, brittle substances, as coral, tutty, precious stones, shells, &c. upon a marble stone, with a muller, till they are thereby reduced to a light subtil powder, when dry. But the grinding instruments had need be very hard, or else they will so far wear away, as to make no inconsiderable part of the medicine themselves. Into this form many materials are reduced which are intended to be given in substance; and therefore they should be clean, dry, well picked, and in the greatest perfection in all respects.

Balsams are either native or factitious; the native Balsams. balsam is an humour or juice exuding from some sort of foreign trees, as the opobalsamum in Africa, and others of Tolu, Peru, &c. Factitious balsams are those compositions in the shops which are made of the native or simple balsams, together with several other things of a cognate nature; and sometimes it is applied to liquors drawn from gums and resinous substances by the help of a vinous spirit. But by balsams are most commonly understood those officinal forms of medicines as are of a thick, odoriferous, oily and penetrating substance, and of a consistence thicker than oil, and thinner than that of an ointment. I shall instance in making the apoplectic balsam, which is thus:

Take the distilled oil of cinnamon, cloves, lavender, lemons, marjoram, mint, rue, rosemary, sage, rhodium, and wormwood, ā gut. xii. amber, gut. vi. bitumen Judaicum 3 ii. oil of nutmegs by expression 3 i. balsam of Peru q. s. to make all together into a smooth balsam.

Ointments or unguents are a form and composition Ointments. of medicine well known: its use is wholly in external applications; and the manner of making it is by boiling up divers drugs or simples with wax, oil, lard, butter, or some such unctuous and cohesive substances, to a proper consistence, which is that that is capable of being easily spread, bathed or rubbed on a part, without running off in a liquid form; or it is the next degree of consistence above a balsam, or the densest liquid. The manner of composing a medicine in
this

this form I shall exemplify in the prescription for an excellent ophthalmic ointment.

Take of tutty and calamine \bar{a} \mathfrak{z} vi. of calcined lead and camphire \bar{a} \mathfrak{z} ii. of myrrh, sarcocolla, white vitriol, and aloes, \bar{a} \mathfrak{z} i. Pulverize the whole, and then take of fresh butter \mathfrak{z} vii. white wax \mathfrak{z} ii. and melt those together; then by degrees shake in the fore-mentioned powder, and stir all together till the whole is cold, and become an ointment.

Cerates.

A cerate is a consistence in the next degree denser than an unguent, and thinner than a plaister: it is thus denominated from the principal ingredient in the composition, viz. wax, which in Latin is called cera; for wax, oil, and some other softer substances, dissolved or mixed together, make a cerate, as appears from the composition of the white cerate of the shops, which is this:

Take of the whitest wax \mathfrak{z} iv. of oil of sweet almonds \mathfrak{z} v. of the finest sperma ceti \mathfrak{z} i. of cerufs washed in rose-water \mathfrak{z} iss. of camphire \mathfrak{z} ss. Make them into a cerate.

Plaisters.

A plaister is a composition of oils, waxes, resins, powders, &c. in such consistence as will keep its form without running or sticking to any thing when cold, but yet is moist enough to be melted and spread, so as to adhere when warm, and not be brittle enough to crack or break off what it is spread upon. But this is a form so well known, that any description is superfluous, and therefore I shall only give an example of its composition in the ammoniac plaister.

Take of a strained gum ammoniacum \mathfrak{z} vi. of yellow wax and resin \bar{a} \mathfrak{z} v. of the simple meelot plaister, ointment of marshmallows, of the oil of bays, and orice, and Venice turpentine, \bar{a} \mathfrak{z} iss. of goose fat \mathfrak{z} i. of sal ammoniac, of bryony root, and the root of orrice, of each \mathfrak{z} ss. of galbanum and bdellium, of each \mathfrak{z} ii. Let them boil together till it becomes of a due consistence for a plaister.

To the foregoing may be added the following anomalous forms, viz.

Potential
cautery.

The potential cautery; this is made of a strong lixivium of pot-ashes and quick-lime boiled to a dryness: it must be kept close stopped in a bottle, else it will

will imbibe the air, and lose its caustic quality. Its use is declared in the pharmaceutic part of surgery.

Elafterium; it is the *fæcula*, i. e. the settlings of the juice of wild cucumbers dried. It is a violent cathartic, and seldom prescribed but in stubborn and desperate cases.

Lapis infernalis, or the infernal stone; the composition of which is as follows: Infernal stone.

Take capital, i. e. the strongest soap-lees, any quantity, and evaporate to a dryness, and keep the residue in a glass well stopped.

Lapis de Goa, or the Goa stone; the prescription for making which is thus: Lapis de Goa.

Take hyacinths, topaz, sapphires, rubies, and pearls, \bar{a} z i. emeralds z fs. oriental bezoar, white and red coral, \bar{a} z ii. musk and ambergrease, \bar{a} z fs. leaves of gold, N^o. xl. Let all be levigated into a fine impalpable powder, and with rose-water made into a paste, which is to be formed into long or oval balls, and polished.

Besides these officinal compositions, there arise several other forms of medicine from extemporaneous prescription and practice, according to the various exigencies and circumstances which attend the several cases and intentions of cure: the principal whereof here follow.

Medicated wines, ales, meads, wheys, &c. which all come under the general denomination of diet-drinks, stand first in order, and are in all chronical cases, and where the disorder of a constitution is gradually to be gained upon, of very great service. The making of these wines, ales, &c. is by taking a due proportion of medicinal drugs and simples, and hanging in a bag in common liquors. Thus, for instance, to make that famous diet-drink called Dr. Butler's ale.

Take betony, sage, agrimony, garden scurvy-grass, Roman wormwood, \bar{a} m. iii. roots of elicampane and horse-raddish, of each z iv. Mix and put them into a bag, and hang it in cong. iv. of new ale while it works. N. B. This is an admirable antiscorbutic.

Emulsion is a liquid form made by blanching and bruising oily seeds and kernels in a marble mortar with Emulsions.

with a wooden pestle, and beat up into a paste: then the liquors ordered are to be put in by degrees, and beat up with the mass, that so the whole pulp may be washed out; and the liquor squeezed out and strained, being of a milky colour, is the emulsion intended, and is generally of the emollient kind. Thus to make the cordial emulsion,

Take plague and compound piony water \bar{a} ziv . citron seeds zss . to which, when made into an emulsion and strained, add pearl sugar ziii . and oil of nutmegs, gr. i.

Juleps.

Julep is a form made of simple and compound water sweetened, and serves principally as a vehicle or diluter to other forms not so convenient to take alone. Thus for a diuretic julep,

Take parsley-water ziv . white-wine zvi . oil of tartar per deliquium zii . syrup of marshmallows zi . and mix them for a julep.

Potions.

Potions or draughts are a liquid form of medicine to be drank at once, or at one draught. And thus several other forms, as powders, electuaries, &c. which to some people are irksome or loathsome in substance, may yet be easily taken in any potion or draught, being dissolved in any proper water or julep.

Linctus's.

Linctus's and lambatives are forms thus called, as being to be licked up with the tongue. These made a wonderful noise and shew in the ancient state of this ostentatious and verbose art, but are now much reduced; nothing but pectorals, and what is grateful to the taste, being reducible hereto.

Bolus's.

Bolus, or bole, originally signifies a fat earth, as the Armenian bole or earth, &c. but in medicine it is applied to that extemporaneous form of one dose, and of the consistence of an electuary, too well known to want further description.

Gargarisms.

Gargarisms are a liquid form of medicine, made of acids and subastringents, to wash the mouth withal, in order to cool and cleanse it from phlegm, &c. Or else are smooth and mucilaginous, to soften and heal it when sore and parched. Take an example of a detergent gargle, thus:

Take

Take spring-water \mathfrak{zvi} . rose-water \mathfrak{zii} . syrup of mulberries \mathfrak{ziss} . oil of vitriol gr. xv. or q. f. to make it agreeably acid.

Lotions are, properly speaking, those washings which are used for beautifying the skin, and called cosmetics; they are therefore made of such ingredients as answer the intention of repelling eruptions, pimples, and all cutaneous foulnesses. The following is a very repelling lotion.

Take common white vitriol \mathfrak{zi} . crude allum \mathfrak{zii} . boil in \mathfrak{zxii} . of spring water to \mathfrak{zviii} . Take off the scum, and put it up for use.

Collyriums are a form of medicine suited to the eyes, and are designed to cool and repel hot sharp humours; to which end therefore

Take Rhasis's white troches \mathfrak{zi} . rose-water \mathfrak{zii} . Or, take calamine levigated \mathfrak{ziss} . rose-water \mathfrak{zii} . Or, take tutty levigated \mathfrak{ziss} . rose-water \mathfrak{zii} . Or, take white vitriol and sugar of lead \mathfrak{a} gr. v. rose-water \mathfrak{zii} . With any of these wash the eyes at discretion.

Embrocation; this I have already declared the nature and use of, and shall here only subjoin an example of its composition.

Take oil of tartar per deliquium \mathfrak{zi} . spirit of sal armoniac \mathfrak{zii} . spirit of wine \mathfrak{zviii} . Mix for use.

Fomentations being already described, I shall here only give a recipe for one against the scurvy.

Take ground pine and henbane \mathfrak{a} m. ii. Winter's cinnamon \mathfrak{ziss} . horse-raddish roots, and earthworms added at last \mathfrak{a} \mathfrak{zii} . Boil in lime-water \mathfrak{lbiii} . to \mathfrak{lbii} . and to the staining add spirit of scurvy-grafs \mathfrak{zii} . and opium \mathfrak{zi} .

Liniment; this is also described as to its use. The manner of its composition you will see by the following example of one for sore eyes.

Take fresh butter without any salt \mathfrak{ziv} . white wax \mathfrak{zi} . tutty prepared \mathfrak{ziss} . camphire \mathfrak{v} . Make all into a liniment.

Cataplasms are made after the manner of this following one against apoplexies and disorders of the head.

D d

Take

Take powder of cloves and nutmegs ā ʒii. Guinea pepper ʒfs. mustard ʒiv. sour leaven ʒiii. compound spirit of lavender ʒfs. and make into a smooth poultice.

Plaisters.

Plaisters are also made by extemporaneous prescription in various ways, and to answer divers intentions; as the following hysseric plaister.

Take strained galbanum ʒfs. assa-foetida ʒii. yellow wax ʒi. camphire ʒfs. oil of amber, gut. x. Make them into a plaister for the navel.

Glysters.

Glysters consist of materials comporting with the intention, whether cathartic, emollient, cordial, restraining, &c. as in the common laxative glyster following.

Take common glyster decoction ʒx. honey of mercury ʒii. common salt ʒfs. oil of camomile ʒi. Mix for a glyster to give milk-warm.

Injections.

Injections are made, in like manner, of a liquid form, and according to the following example of one for a gonorrhœa.

Take Rhasis's white troches ʒiii. camphire ʒi. Dissolve them in spring-water ʒxii. for an injection, to be injected into the urethra two or three times a day.

Suppositories.

Suppositories are generally made with a bit of the aloephagine pill, or the extract of ruius; and for children they mostly use violet comfit, sold by the confectioners. This being rolled up in a convenient bigness and shape, is dipped in oil, or rubbed over with butter, to facilitate their passage: and thus others are made of proper materials for parts and purposes.

Frontals.

Frontals are forms of medicine so called because applied to the temples and forehead in violent hot beating pains of the head, and when the eyes are afflicted with rheums, &c. Thus for a cephalic frontal,

Take rose cake, fry it in vinegar, and sprinkle it with powder of nutmegs ʒi. zedoary ʒfs. and camphire ʒii. This, when applied, is to be moistened with vinegar so often as it grows dry, till it has answered its end.

Epithems.

Epithems are any outward application, but chiefly those of a liquid form, like fomentations, as may be seen by the following recipe for an excellent cephalic epithem.

Take

Take Hungary water \mathfrak{zvi} . compound spirit of lavender, and spirit of saffron, $\bar{a} \mathfrak{zii}$. apoplectic balsam $\mathfrak{z i}$. oil of cloves, gut. x . Mix, and rub the temples, nostrils, &c. therewith in swooning fits and nervous disorders of the head.

Sternutatories are all things that, when applied to the nostrils, will excite sneezing, as all sorts of snuffs; but in some particular exigencies, some special sternutatory may be necessary; and the following is preferable to all other medicines to this purpose. Sternutatories

Take sal volatile oleos. $\mathfrak{z ii}$. spirit of lavender, gut. xx . damask rose water, or orange flower water, $\mathfrak{z ss}$. Mix for use.

Sacculus, or bag, is a form sometimes used in common practice, and ordered in extemporaneous prescriptions. These medicinal bags are filled with proper simples, and applied to the affected part, sometimes dry, and sometimes dipped in hot spirituous liquors, and applied as hot as can be borne: they are also wore upon a part very often for a considerable time, &c. The following is reckoned very good for weak stomachs. Sacculus.

Take dried mint $\mathfrak{z ss}$. wormwood, thyme, red rose water, $\bar{a} \mathfrak{zii}$. balaustines, angelica root, carraway seeds, nutmegs, mace, and cloves, $\bar{a} \mathfrak{z i}$. Make all into a gross powder, put it into a bag, and wear it on the stomach for some time.

Suffiments or fumes having been already described as to their nature and manner of use, it only remains that I here subjoin an example of their composition, which takes in that which is prescribed against the falling down of the womb. Suffiments.

Take myrrh, mastich, cinnamon, and spikenard, $\bar{a} \mathfrak{z i}$. mint and red roses, $\bar{a} \mathfrak{zii}$. zedoary and pimento, of each $\mathfrak{z ss}$. Make into a gross powder to burn upon a chaffing-dish of coals under a chair with a hole in it, over which the patient is to sit and receive the fumes.

A nodule is only a few medicinal simples tied up close in a little piece of silk, and suspended in juleps, apozems, &c. and are often serviceable held under the nose; for which cause they are often prescribed as in the following manner: Nodules.

D d 2

Take

Take species diambrae zss . oil of cloves, lavender, and marjoram, of each gut. iii . volatile sal ammoniac \texteth . Rub them together, and tie up in a piece of silk for use. N. B. This held frequently under the nose, proves a very useful and grateful cephalic.

Cucupha.

Cucupha is an ancient form of quilting spices into a cap to be wore upon the head in disorders of the nerves and head, but are now very rarely prescribed or used; though they may be useful on many accounts.

Pessary.

A pessary is an oblong form of medicine to thrust up into the uterus upon some exigencies; and one for promoting the menses may be made as here prescribed.

Take powder of myrrh zij . safin tops, oil of anniseed, \textethss . With the yolk of an egg bring them into the consistence of an unguent, which rub over pieces of gentian root, formed S. A.

Turundæ.

Turundæ, or pellets for the tooth-ach, are thus to be made:

Take mastich \textethi . camphire and opium, $\text{\text{a gr. ii}}$. oil of origany, gut. i . Make into a pellet. Or, take frankincense and Matthew's pill, $\text{\text{a gr. x}}$. oil of cloves, gut. i . and make into a pellet.

These are the most usual and considerable forms of medicine of the officinal or extemporaneous kind now in use. As for broths, pastes, peas, tents, necklaces, ptisans, possets, &c. they are some of them well known, others frivolous and chimerical, and all of too little moment to be mentioned here.

CHEMISTRY.

Of chemistry.

Chymistry, or, as it should be wrote, Chemisttry, is an art whereby sensible bodies contained in vessels, are so changed by means of certain instruments, and especially fire, that their several parts of different natures becoming disunited or separated, their several powers and virtues are thereby discovered, with a view to the uses of medicine, natural philosophy, and other arts and occasions of life.

Its antiquity,

Chemisttry boasts an antiquity superior to all other arts, and equal to that of fire itself, or, at least, the knowledge

knowledge of its use; Egypt being the country which first produced it, and Tubal-Cain (the Heathen Vulcan) its inventor.

This art in various places, and by divers persons, and various has received many and different denominations; as (1.) *Poietice*, the art of making or producing things, (viz. *denominations* by fire.) (2.) *Chrysopoiesis*, the art of making gold; and therefore, by way of pre-eminence, the Arabians called it (3.) *Alchemy*, which has been since applied to the art of making gold, and finding the philosopher's stone; and they who profess this are called the adepts or adepts. (4.) The *hyssopic* art, by Paracelsus, from *Adepts*. *Pfal. li. 7.* (5.) The *hermetic* art, from *Hermes Trismegistus*, its supposed inventor. (6.) The *spagyric* art, or the art of extracting and collecting, viz. the virtues of things. (7.) *Pyrotechny*, or the art of *Pyrotechny*. fire, as being the principal agent made use of; and chemists are therefore called *pyrotechnists*.

In this art we shall just consider (1.) The subjects, which are all natural compounded bodies, whether of the fossil, vegetable, or animal kind. (2.) The operations, as calcination, sublimation, &c. (3.) The instruments; as fire, water, menstruums, various vessels, &c.

The chemists distribute the subjects of their art into three kinds, which they call the three kingdoms, viz. *Three kingdoms of chemistry*. the fossil kingdom, the vegetable kingdom, and the animal kingdom: and these three grand genera, or kinds of bodies, comprehend all the lesser and subordinate species and classes of bodies of what nature soever.

The fossil kingdom contains whatever is dug up out of the bowels of the earth; and all bodies thus dug up are called fossils or minerals. These are of two sorts, simple and compound. Simple fossils are such whose parts are all of the same nature; and are of four species. *The fossil kingdom.*
 (1.) Metals, which are in number six, viz. gold, silver, lead, copper, iron, tin; to which some add mercury or quicksilver. *Simple fossils.*
 (2.) Salts, of which are the following kinds: sea-salt; sal-gem, or rock-salt; nitre, or salt-petre; sal ammoniac; borax; allum; a vague salt, or saline acid. (3.) Stones, vulgar and precious. Precious stones, called also gems and jewels, are either entirely transparent, as the diamond, emerald, &c.

&c. or else brilliant or shining, as the Bohemian garnet; or lastly, semi-transparent, as oculus cati, opal, &c. (4.) Earths, of which there are various sorts; as chalk, clay, marle, sand, &c.

Compound
fossils.

Compound fossils are all those whose parts are dissimilar, or heterogeneous, or may be divided into parts of a different nature; as antimony may be resolved into sulphur and a metalline part. The chief species of compound fossils are, (1.) Hard sulphurs, as brimstone, arsenic, orpiment, realgal, bitumen, asphaltum, &c. to which some add amber, jet, and ambergrease. (2.) Liquid sulphurs, as pissasphaltum or Jew's pitch, naptha, petroleum or oil of rock, &c. (3.) Semi-metals, or kind of half metals; as antimony, cinnabar, marcasite, bismuth, calamine, cobalt, pyrites, vitriol, magnet or loadstone, with several other mineral stones and substances.

The vegetable
kingdom.

The vegetable kingdom supplies the chemists with bodies the most simple and resolvable of all others. The nature and texture of vegetable substances render them compleatly manageable by chemical operations; and therefore a good deal of this part of chemistry hath been introduced or practised with the Galenical pharmacy, as appears by what goes before. The chemists resolve a plant, or any vegetable body, into the following principles, viz. (1.) Water or phlegm. (2.) A spirit. (3.) Salt. (4.) An oil; and (5.) An earth, called caput mortuum. And each of these, more or less, from every part, whether root, stem, leaves, flowers, fruits, or seeds of a plant.

The animal
kingdom.

The animal kingdom comprehends all that part of the creation endued with sensitive life and spontaneous motion; that is, all sorts of animals. Every part of an animal also, whether bone, flesh, hair, horn, shells, humours, as blood, milk, urine, &c. are subject to the chemical analysis: for the chemists reduce any animal substance into the following component principles, viz. (1.) A spirit, being a sulphureous oily matter, volatile, and miscible with water. (2.) Water, even from the driest bone. (3.) A salt, but neither acid nor alkaline, fixed or volatile, but a compound sort. (4.) Oil, which is compounded of a volatile oil and earth. (5.) Earth,

(5.) Earth, a little more volatile than that of vegetables. and perfectly immutable.

Having taken a short view of the *Materia Chemica*, Of chemical operations, we now proceed to speak of the principal operations of the art: for though the chemist pretends to no more than a solution or separation of the parts of natural bodies, or else an union or coagulation of them, yet divers methods or different operations are requisite to obtain either of those ends; the chief whereof are the following, viz. (1.) Calcination. (2.) Filtration. (3.) Clarification. (4.) Distillation. (5.) Dissolution. (6.) Fermentation. (7.) Digestion. (8.) Extraction. (9.) Crystallization. (10.) Incorporation. (11.) Sublimation. (12.) Precipitation. (13.) Cohobation. (14.) Amalgamation. Of which in order.

Calcination is such a management of bodies by fire, Calcination, as brings them to a calx, by forcing off all the moisture, in which state they are easily reducible to powder, and is for that reason termed chemical pulverization. This operation is seldom performed without melting or fusion, being chiefly employed about metals and salts: for after those hard bodies are fused, or liquified for a long time, the subtil particles fly off, and the fire is so intimately mixed and blended through all their substance, that the fluidity can no longer subsist, but there is produced a third sort of body, very brittle and porous, and easily reduced to powder. To calcination belongs vitrification, or turning bodies, as flint, &c. into glass, or a substance pellucid and like thereto.

Filtration is a method by which liquors are rendered Filtration, fine and clear; and is performed either by passing the liquor through a paper, which, by reason of the smallness of its pores, admits only the finer parts through it; or else by laying a cord or piece of cotton, &c. one part in the liquor, the other to hang over a vessel placed below the said liquor; for through this it will ascend and drop over very fine, and clear from the foul and grosser parts.

Clarification or depuration is another way of purifying and improving some medicines, as decoctions, and other turbid liquors, which is done by beating them up with the whites of eggs to a froth, which, Clarification.

upon boiling, will entangle the grosser parts, and carry them up to the top in a tough scum, which then is to be taken off with a spoon, or separated by the Hippocrates's sleeve, which is a thick flannel bag.

Distillation.

Distillation is causing by fire an ascent or elevation of the particles of bodies in form of vapour, which afterwards are condensed, and descend in form of drops; and this is done by the retort in a sand-heat, by the alembic, or by the cold (or common) still: the manner of which has been already hinted.

Dissolution.

Dissolution is the dissolving of the natural cohesion of the particles of solid bodies, by which means they are set in motion, and the bodies are brought into a state of fluidity. Thus salts are dissolved by various menstrua, as air, water, &c. Thus also gold dissolves in aqua regia, and silver in aqua fortis. Lastly, metals will dissolve in a saline menstruum, and resins in a sulphureous one.

Fermentation.

Fermentation is a term of a very lax and vague idea, though in general nothing more than an intestine motion caused in the particles of bodies by the admixture of such matter as contains subtil spirituous particles wrapped up in viscid ones, is understood thereby: for the spirituous particles being always upon an endeavour to release and extricate themselves from the viscid ones, will, till they obtain their liberty, produce a commotion in the medium wherein it happens. Of fermentation there are various species, which are of different uses in the chemical pharmacy, and especially the fermentation of vegetables and their juices, whereby their medicinal efficacies are exalted by disengaging and separating the finest and most spirituous parts thereof.

Digestion.

Digestion is that solution of bodies as is made by menstrua by the assistance of fire, and differs in little else than the fire from the common dissolution of bodies before described. And indeed all kinds of solution depend upon this general principle, viz. That the particles of the body to be dissolved be by fire, or otherwise, so far attenuated, that their specific gravities become less than that of the menstruum, or tenacity and resistance thereof; for otherwise they could not be sustained or suspended therein, and mixed therewith; but

but would sink directly to the bottom, and there consolidate again.

Extraction, taken in its largest sense, signifies any solution of bodies made by menstruums, wherein not the whole substances, but only certain particles, are carried off, or absorbed thereby. But what is properly called extraction, and is here intended, is such an inspissation, or thickening of a solution, as when a certain quantity of the menstruum is drawn off, the remaining mixture is reduced to the consistence of honey. But of this I have already spoken under the Galenical Pharmacy. Extraction.

Crystallization is the bringing of the particles of saline substances into such a state or consistence as to resemble the form of crystal, but variously modified according to the nature and texture of the salts. The method is this; the saline body is dissolved in water, afterwards the solution is filtered, which being evaporated till a thin film appear on the surface, it spontaneously runs into crystal. Crystallization.

Incorporation is a process which brings and joins together, by the interposition of a particular body, such others, as in themselves are incapable, or very difficult to be mixed or incorporated together. Thus oils and syrups are incorporated in eclegma's and linctus's by means of sugar, salt, or such like substances. Thus a mixture of turpentine, balsams, &c. with aqueous liquors, is effected by the interposition of the yolk of an egg; and thus a mixture of metals is likewise produced by amalgamation. Incorporation.

Sublimation is the raising and elevating the solid and dry parts of bodies by means of fire, in like manner as the fluid parts are raised by distillation. The subjects of this process are all volatile bodies, or such which contain volatile parts, as salts of animal substances: thus the salts of minerals are sublimed, and the salts of vegetables, as salt of tartar, &c. By this method are obtained those fine soft substances called flowers; as flowers of sulphur, antimony, bismuth, &c. Sublimation.

Precipitation is that process by which particles of bodies dissolved and suspended in a menstruum are made to sink or fall to the bottom thereof. The particles sometimes precipitate of their own accord, but Precipitation.

but oftener by the assistance of some other liquor added to the menstruum. As bodies cannot be sustained till they are rendered specifically lighter than the menstruum in which they are dissolved; so, on the contrary, if any menstruum be made lighter than the said dissolved particles, it is plain they cannot be sustained or suspended any longer, but must fall to the bottom. This is the reason of precipitation, and is effected two ways, viz. by dropping into the menstruum a liquor specifically lighter or heavier; the first renders the menstruum lighter than before, and therefore unable any longer to suspend the dissolved body; and the heavier liquor, what with the weight of its particles, and the impetus they acquire in their descent, carry down and sink all the solid particles they meet with in their way. In the first case, the spirit of sal ammoniac will plentifully precipitate the filings of metals dissolved in acid menstrooms; and in the latter, water alone will precipitate tinctures of vegetables extracted by spirit of wine.

Cohobation.

Cohobation is a sort of repeated distillation, or such wherein the liquor first drawn off is (instead of fresh water, &c.) again returned upon the subject to be drawn off a second time, which is again cohobated, or poured on the subject in the still, and so is continued or repeated several times; the intention of which is to open and separate mixed bodies, to extract their virtues more essentially, to volatilize spirits, &c.

Amalgamation.

Amalgamation is a process employed about metals, and consists in mixing mercury with them when fused or melted, in order to fit them to be extended on some works, as gold; or else to reduce it to a very subtil powder, by evaporating the mercury. No iron or copper can by any means be amalgamated.

Of chemical instruments. Elements.

The instruments used in chemistry are of three several kinds, viz.

First, the Elements; as (1.) Fire, on whose agency all the art depends, for it is by fire the particles of bodies are forced apart, and put into motion; as in distillation, sublimation, fusion of metals, &c. (2.) Water, whose use is general and well known in chemical operations. (3.) Air; this is considered by chemists as an almost universal dissolvent, and as such properly

properly belongs to the next head. (4.) Earth, which is of various and frequent use in this art; as in lutings, sand-heats, &c.

Secondly, Menstruums; which are any kind of Menstruums; dissolvents, or liquids, which by steeping or digesting bodies in them, do by degrees dissolve or disunite the particles of those bodies, and so change them from a solid to a fluid state. And of this sort of instruments are air, water, spirit, mercury, and various others, both natural and chemical preparations.

Thirdly, Vessels or Utensils of divers sorts; as furnaces of several forms and kinds, alembics and stills, retorts, receivers, cucurbits, matrasses, crucibles, lingots, coppels, alludels, cranes, &c. all which to describe here would answer but little purpose; since a just idea of their forms and uses is only to be obtained either by large prints, or an actual view of them in the laboratories of the chemists.

Of P H Y S I C, or the Theory of MEDICINE and DISEASES.

Medicine or
physic de-
fined.

Its object.

Medicine
divided into
five parts ;
Physiology,
Pathology,
Semeiotics,
Hygieina,
Therapeutics.

Of physiology
and what it
teaches.

The animal
structure and
œconomy.

Life, what.

MEDICINE, or, as it is commonly called, Physic, consists in the knowledge of those things, by the application of which the health of bodies is preserved or restored, by removing diseases. The object therefore of medicine is the life, health, disease, and death of mankind ; the causes whence they arise, and the means by which they are governed.

This art is divided into five great parts, viz. (1.) Physiology, in a strict sense so called, which respects the nature of the human body. (2.) Pathology, or the doctrine of diseases. (3.) Semeiotics, which relates to the signs and indications of diseases. (4.) Hygieina, or that which prescribes rules for the conservation of life and health. (5.) Therapeutics, which treats of the materia medica, and cure of diseases.

Physiology, the first and most philosophical part of medicine, explicates (1.) The nature, structure, and parts of the human body, with their use in the whole animal œconomy. (2.) What life is, and wherein it doth consist. (3.) What the true notion of sanity or health is : and, (4.) The various effects of life and health, or a good state of the animal constitution : all which particulars are called the *res naturales*, or things according to nature.

The structure or constitution of the human body, and the use of the parts in its œconomy, hath been already explained in the chapter of Anatomy, and is thence to be learned.

Life is said to be that condition of an animal body, which, both with respect to the solid and fluid parts, is absolutely requisite, that there might subsist a mutual union and commerce between the body and mind, in some certain manner ; or which, when impaired, may be some how restored without necessarily destroying the same.

Health

Health or sanity is that affection of life which arises from that due structure, conformation, temperament, and oeconomy of an animal body, whereby all the parts thereof are in a proper condition to exert all their natural actions and functions of life, with a requisite degree of facility, delight, and constancy. Or, health is a right exercise of the actions of the solids and fluids according to the laws of nature, whereby the circulation of the blood is maintained through the minutest arteries without obstruction. And this disposition of the parts, and the justness of their actions, which is the foundation of health, proceeds from, or is the effect of what is called the equilibrium naturæ, or balance of nature; which is defined to be that equal temperature of the solids and fluids wherein the blood is capable of circulating freely; the several secretions are made therefrom in the exactest proportions, and the excrements excerned, by all the different emunctories, without the least obstruction. Whence it proceeds.

This balance of nature itself arises from that proper tone, tensility, springiness, or contractile power of the fibres of the solids, as effects a due circulation, liquidity, and requisite secretions of the fluids. While the body enjoys this even standard state, it is possessed of the most desirable serenity, ease, pleasure, and cheerfulness of mind. But if the constitution rises above, or sinks beneath this balance of nature, there will ensue diseases of two different kinds, as will be described under the next general head, unto which we are now come. The balance of nature.

Pathology, the second great part of physic, treateth of diseases, and declareth (1.) What a disease is, and the nature thereof. (2.) The differences of diseases. (3.) The causes of diseases; and (4.) The effects thereof. And in regard of this fourfold division, it is said to be pathological, nosological, ætiological, and symptomatological. Of pathology.

Pathologics expounds the nature of diseases, and defines a disease to be that state of a living body which takes away the faculty of exerting any of its proper and necessary actions. Or, a disease is the effect of that state wherein the natural actions of the solids and fluids are perverted in their motions, either above or

or below the balance of nature, which constitutes the standard of health.

Therefore as long as the solids are destitute of their due tone and vigour, so long will the fluids lose their proper degree of fluidity, purity, and direction, of motion; so long will the body conceive disorder, pain and disquietude; so long will the faculties intermit their proper springs for the well-being of the machine; so long will the animal œconomy be disturbed and dissolved in confusion; so long will uneasiness and pain afflict the senses, and weakness, languor, and inactivity, accrue to the body; and a person affected with this unhappy state, we call a sick or unhealthy person, and, if under a physician's care, a patient.

Nosologia, or
doctrine of
diseases.

Nosologia distinguishes the several differences of diseases, and thereby ranges them into classes of divers kinds. Diseases are different on many accounts; for (1.) They differ with respect to their causes; and thus they are said to be idiopathic, or from a proper affection of the part; sympathetic, which arise from the affection of another part; hereditary, or which we derive from our parents; connate, or which we were born withal; acquired, or which we have gotten accidentally, &c. (2.) In respect of the parts of the body, as the diseases of the fibres, of the organs, and of the different humours or fluids. (3.) In respect of the subject or sex; as the diseases of age, of infants, of children, of youth, of adults, and of old folks. And again, there are diseases proper to men, to women, to virgins, to the pregnant, to women in labour, to nurses, &c. both universal and particular. (4.) In respect of time, diseases are said to be acute or chronical; acute, if they terminate within twenty days; very acute, if within seven days; and most acute, if within four: all the rest are chronical. Again; if they are said to be vernal, which happen properly in the spring; autumnal, if in autumn; also continual, continent, intermittent, &c. (5.) In regard of their nature and effects, they are said to be wholesome, benign, malignant, curable, incurable, deadly or mortal, &c. (6.) With respect to the manner of propagation, they are said to be contagious when caught by infection; epidemical, when the infection is universal,

verfal, and the contagion ſpreads over the land, city, &c. endemical, when it is proper to the inhabitants of any particular country.

A diſeaſe is alſo conſidered with reſpect to the ſeveral ſtates or periods it paſſes through from firſt to laſt; and they are as follow: (1.) Arche, or the beginning of the diſeaſe. (2.) Anabaſis, or the growth, increaſe, or progreſs thereof. (3.) Acme, or the ſtate or height of the diſorder. (4.) Paracme, or decreaſe or declenſion of the diſeaſe. (5.) The end or final removal thereof.

The ſtates of a diſeaſe.

In all intermitting diſorders, as agues, fevers, &c. the acceſs or coming-on of a fit is called a paroxiſm of the diſeaſe, or an exacerbation or growing worſe. In acute diſeaſes, which conſiſt in the humours, the matter of the diſtemper is, for the moſt part, at a certain time ſo diſpoſed, that there is a ſudden change or mutation of the diſeaſe to better or worſe, to health or death; which alteration is called the criſis of the diſeaſe, and the matter ſo diſpoſed the critical matter thereof.

Ætiology is that part of pathology which treats of the cauſes of diſeaſes. The cauſe of a diſeaſe is any thing which occaſions in us a ſenſation of pain or ſickneſs, whether it be by producing a new and morbiſic ſtate of the ſolids and fluids, or by taking away any thing abſolutely requiſite to the exerciſe of the functions.

Of ætiology.

The cauſes of diſeaſes are generally divided into (1.) Internal, when it was pre-exiſting in the body before the effect was produced or did appear: theſe firſt diſaffect the humours, then the ſolid parts. (2.) External, which exiſts without the body, and afterward applied thereto, breeds a diſeaſe: theſe generally hurt the ſolids firſt, and then the humours. (3.) Remote, which is not wholly ſufficient of itſelf for producing of a diſeaſe, but only ſo alters the body, as renders it apt and ſuſceptible thereof, in caſe any other cauſe ſhould occur and join its baneful influence. Both theſe together make the (4.) Proximate cauſe of a diſeaſe, which is no other than that whole cauſe which gives being to, and by its preſence continues the

Cauſes of diſeaſes.

The primary
or general
cause.

the present disease, and which being removed, the distemper will instantly cease.

But the immediate, primary, and most general cause or spring of all diseases, whether acute, chronic, or complicated, results from the elevation or depression of the tone of the vessels, and the motion of their fluids above or beneath the balance of nature; and the several degrees thereof produce the several degrees of diseases: for too great a contraction of the vessels will increase the division of the blood, which again will increase the motion, quantity, and heat of the blood; whence fevers of several kinds arise, and many other disorders.

The remote
cause.

The remote cause, inherent in the body, is called the proegumenical or pre-disposing cause; and such is a vitiated temperament in regard of heat or cold, a plethora, and cacochymia, or ill state of the fluids. The cause which is accessory to this, and together make the disease, is called the procatactic cause; and this improves the pre-disposed constitution or part into a real morbid state, and subjects it to actual and immediate illness.

Remote and
proximate
causes,
whence.

The remote and proximate causes arise from principles of various kinds, but may be reduced to four general heads, which are, (1.) The ingesta, or things received into the body, as air, meat, drink, medicines; as also all manner of fumes, scents, contagions, and other invisible species which enter unseen the small pores and spiracles of animal bodies, or by any other passages whatever. (2.) The gesta, or things done by the body or any part, as motion, rest, the affections of the mind; as also sleep and watching. (3.) The retenta and excreta, or things retained in, and excerned from, the body, whether they are salubrious, recrementitious, or morbose; as the blood, saliva, urine, semen, bile, the fæces, &c. (4.) The applicata, or things externally applied to the body; as air, vapour, foment, baths, raiment, liniments, plaisters, or any things causing wounds, bruises, fractures, corrosions, &c.

Some physicians, with less reason and accuracy, have made the general topics or sources which minister the aforesaid causes of diseases to be the following:

(1.) Air.

(1.) Air. (2.) Meat and drink. (3.) Motion and rest. (4.) The passions. (5.) The excretions; and (6.) Sleep and watchfulness: while others make only the following six, viz. the air, meat, drink, action, rest, and the passions. These things they call the *res non-naturales*, or non-naturals; so called, because, by an undue or ill use of them, their natural effects are not well performed, but perverted into the unnatural production of diseases, as you may see largely exemplified in books of physic. Non-naturals.

Symptomatology describes the symptoms of diseases: that preternatural accident or effect which arises from a disease as its cause, but yet may be distinguished from the disease itself, and from its proximate cause, is called the symptom of the disease; and if in the same manner it flows from the cause of the disease, it is said to be the symptom of the cause: but if it proceeds from any prior symptom, as its cause, it is called the symptom of a symptom. Symptomatology.

From hence it appears that these first symptoms are again themselves really diseases, but very dissimilar in number, variety, and effect; but yet, according to the doctrine of the ancients, they are agreeably enough distinguished and ranged under the three following classes: (1.) The vitiated actions of the organical parts. (2.) The vices, or corrupted state of the retenta and excreta. (3.) The preternatural or vitiated qualities of the body. Classes of symptoms.

The organical and vital actions are vitiated in various ways: for (1.) They may be impaired and diminished; whence the symptom *disorexia* in a distempered appetite, *dispepsia* in a weak stomach, &c. (2.) The action and power of the part may be abolished and destroyed; whence the symptom of *anorexia* in a lost appetite, *aepsia* in a stomach incapable of digestion, and profusions of several kinds when the vessels have lost their retentive faculty. (3.) They may be too far excited and augmented, as in the palpitation of the heart, &c. (4.) They may be depraved and perverted; as in the *malacia*, or a longing after things unfit for food, yellow vision in the jaundice, &c. The vital actions how vitiated.

Vices of the
retenta and
excreta.

The second class of symptoms is the vices of the retenta and excreta, which also are manifold; as the deficiency of nourishment is attended with an atrophy of the part; a redundancy of the humours, or plethor, is attended with inflammations, eruptions, profusions, and other like symptoms. The cacochymia, or ill and perverted state of the humours, is attended with a direful train of symptoms not to be recounted for number. The obstructions of the secretions, and heterogeneous admixture of the excrements, greatly augment the bulk of this class of symptoms.

Vitiated qua-
lities of the
body.

The third and last general class or order of symptoms is made up of the vitiated qualities and temperature of the body. Though every particular man has his idiosyncrasia, or constitution peculiar to himself, yet all constitutions are subject to general depravations with respect to the just balance of nature, whereby the qualities, complexion, and temperament of the body, are generally affected with some common vice. Of these vitiated complexions the antients reckoned the following eight. (1.) The hot, arising from too robust, strong, and contracted viscera, and too sharp, fizy, and accelerated humours. (2.) The cold; arising from just the contrary causes. (3.) The humid; proceeding from a loose and flaccid state of the solids, and a redundancy of humours too much diluted, aqueous, and soft. (4.) The dry; from opposite causes. (5.) The biliose; from too great a secretion and abundance of the bile: this agrees with the hot and dry. (6.) The sanguine; or which abounds with great plenty of blood. (7.) The phlegmatic; abounding with too much phlegm, or pituitous and viscid humours. (8.) The melancholic; supposed formerly to proceed from a black sort of bile, but it seems rather to proceed from causes similar to those of the hot, dry, and biliose, or rather compounded of them. And these are the pre-disposing symptoms which give notice what diseases the habit of each constitution is subject to.

Various tem-
peraments of
the body.

Of semeiotics.

Semeiotics is that part of physic or medicine which treats of those phaenomena or signs of diseases by which the physician is assisted in making a judgment of the presence,

presence, nature, state, and event thereof, by a just physiological ratiocination.

Of these pathognomic characters or signs of diseases, Diagnostics of a disease. there are reckoned two sorts. (1.) Those which are called the diagnostic or delotic signs: these are the peculiar appearances that result from the causes, and comprehend that collection of concurring symptoms that clearly indicate the presence, nature and intenseness of the disorder: for every distemper has its peculiar marks or tokens whereby it is differenced from every other, though ever so nearly related by some common characters. (2.) The prognostics are those The prognostics. phænomena which enable the physician to foresee and foretel the event of the disease, and the fate of the patient consequently thereupon. The prognosis therefore of diseases is to be taken from the intensity of the disease, the force of the symptoms, and the impressions they make on the constitution of the patient.

The diagnostics of a disease are formed from the Topics of the diagnostic signs, following general and particular topics: (1.) The pulse of the arteries; hereby the motion, velocity, heat and temperament of the blood, is in a great measure indicated. (2.) The breath or respiration; which indicates the nature, place, and intensity of the disorders of the lungs, and other parts of the thorax. (3.) The urine; which by its quantity, colour, odour, taste, fluidity, and contents inherent in it, discovers very obviously the state and quality of the blood, and the disposition of the parts through which it comes. (4.) The parts affected; which, as they are the more noble, are the more dangerous. (5.) The degree of pain. (6.) The manner of the attack. (7.) The parts communicating. (8.) The temperament of the patient. (9.) The force and effects of the symptoms.

The prognostics of diseases may also in a good and of the prognostics. measure be deduced from the foregoing general topics, but more effectually from the following particular ones: as (1.) The necessity of the function of the part indisposed to life and health. (2.) The peculiar nature and disposition of the said part. (3.) The increase and malignity of the disease itself. (4.) The violence of the symptoms. (5.) The excretions, as sweat and urine. (6.) The epidemical disposition of

The object of
diagnosis and
prognosis.

Axioms of
diagnostics
and prognos-
tics.

the air. (7.) The season of the year. (8.) The sex, age, manner of life, &c. of the patient.

The object of the diagnosis and prognosis of diseases is more immediately the matter thereof in its different permutations, which in its first state is said to be crude, in the second mature, in the third critical, which is then generally thrown off by some critical evacuations, as vomiting, salivation, fluxes, by urine, the hæmorrhages, bleeding, perspiration, or revulsion of humours from one part to another. Thus the disease by degrees either declines and goes off, or becomes more malignant, dangerous, and ends in death, according as the time and other circumstances of the critical evacuations were favourable and requisite or not. Whence the following axioms in diagnostics and prognostics, and others like them, have been received and established, viz. (1.) The critical evacuation happening after the maturity of the disease, is always good. (2.) The same happening on the critical day is good. (3.) It is various with regard to the time, age, temperature, sex, region, season, disease, and epidemical constitution of the air. (4.) It is always bad before the maturity of the morbid matter. (5.) The maturity or digestion itself is always good. (6.) The sooner the matter of the disease comes to a state of digestion the better, but not so of the crisis. (7.) The more vital, animal, or natural functions, continue the same as they were in health, the greater degree of life, and better hopes of recovering perfect health remains. (8.) The more necessary that function is, on which many others depend as their cause, and which in a sick person is affected with the disease, the more dangerous is his case. (9.) The more any of the disordered vital actions change to their natural state, the better the digestion goes on. (10.) The more the excrements are like those in health, the more perfect is the concoction or digestion; and the contrary.

There are three principal things by which the physician is assisted in discovering the nature, state, species, seat, &c. of a disease, and forming his diagnosis and prognosis of the same, viz, the pulse of the arteries, the breath and urine.

The

The pulse, as it indicates the manner of the blood's motion in all its variations, is of the greatest consequence to be well understood; it is the compass by which the physician steers his course in discovering the state of the latent parts and regions of the microcosm. By the elevation or depression of the pulse above or below the natural standard, he judges the impulse of the heart to be stronger or weaker, the contraction of the solids to be greater or lesser, and the motion of the fluids to be swifter or slower, than what should naturally be. The principal distinctions or variations of the pulse, and their indications, are as follow.

A high pulse that beats quick, indicates acute continual fevers, and generally attends the paroxysms of chronic diseases, where the intenseness of the pain is apt to create a fever; for in such cases the solids have their contractions elevated above the natural tone, which they suffer from the endeavours of nature to remove the cause of the paroxysm. High.

A quick pulse, if low, is ever a weak pulse; and most commonly attends malignant fevers; and arises from obstructions in the brain, whereby the animal spirits cannot be detached in quantities sufficient to influence the heart. Hence spring all those fatal stupors and disorders of the brain, which the patient generally sustains under these circumstances. Quick.

A strong pulse, if high, is generally an hard pulse; and indicates inflammatory fevers, as the pleurisy, peripneumony, &c. which proceed from a plethora or fulness of the vessels, which keep the arteries tense, and distended with their fluids. Strong.

The pulse which attends the most acute pains, or nervous disorders, differs but little from what it beats when the body labours under acute inflammatory fevers; as in the severe pains of the gout, stone, &c. Slow.

A slow, weak, equal pulse, is generally the concomitant of chronic diseases, which arises from the over relaxed state of the solids, and the consequent viscosity of the fluids. Yet the pulse, in this case, is stronger than in malignant fevers. This pulse therefore attends the scurvy, the jaundice, melancholy, and all those of a cachectic habit of body. And if the pulse, under these circumstances, varies to a little

Respiration
another indi-
cation of the
state of pa-
tients.

quicker, there is a danger of wastes, decays, and consumptions.

Respiration, or the breath, is the next principal sign which indicates to the physician the internal state of the patient, and the nature of his malady. If the respiration be easy, constant and free, it indicates a good state of the lungs, and a commodious transmission of the blood through them. If it be difficult, it denotes the contrary, and is the worst presage, in all cases, that can be: if it be at the same time painful, it betokens for the most part somewhat of an internal inflammation, a most inauspicious omen. A great respiration is always a favourable sign; as, on the contrary, a small one is very ominous. A gentle respiration is in itself the best sign; but if too quick, it declares the organs of breathing to be ill affected, and therefore is fearful and dangerous. An equal and unequal respiration is very auspicious or very ominous respectively. A suffocative respiration ordinarily denotes death shortly; and that is almost as bad which is high, and in the upper part of the thorax. A cold breath is deadly, as denoting a gangrene of the viscera and internal vessels. A short, interrupted, and difficult breath, every one knows is the constant concomitant of the phthisic or asthma. But the phenomena of respiration are wonderfully varied and disturbed in divers men, according to the native constitution of the body, and formation of the thorax, and other parts serving to respiration.

Urine a third
indication of
the state of
the body.

The urine conduces much to form a just diagnosis and prognosis of the disorder; but because it has been abused and prostituted to vile ends and purposes, the urinal is now brought into general contempt; and a wise and regular physician will scarce hear of the inspection of urine, because the quack and empiric so much abuse it; and there is a statute which prohibits the members of the college giving judgment on urine, unless present with the patient to judge of all the other concurring symptoms. However, it is very certain, that the urine is a very proper and useful sign, and highly necessary to be well attended to. I shall therefore point out some accidents by which it is a very obvious sign, both diagnostic and prognostic, to the

the judicious observer. (1.) An extraordinary discharge of urine denotes a laxity of the parts, a diminished perspiration, and imperfect mixture of the blood, or some nervous and hysteric disorders, excessive drinking, &c. all which are undoubtedly of great importance to be known. (2.) Too small and sparing a discharge indicates obstructed vessels; an increase of other excretions. (3.) A thin, limpid, aqueous, insipid, tasteless and uncoloured urine, is a very bad symptom, and predicts an ill state of the viscera, deliriums, phrenzies, convulsions, and many times death in acute and inflammatory diseases. (4.) A red urine, without a sediment, in acute diseases, gives a terrible idea of the case of the patient, and foretells it will be attended with fatal consequences. (5.) The same with a sediment, presages the continuance of the disease; the weakness or destruction of the small vessels; sweats, salivation, and colliquative diarrhoeas; atrophy; and all sorts of dropries. (6.) A saffron-coloured and bitter urine is always the effect of the jaundice. (7.) A green urine, with a thick sediment, denotes melancholy, iliac pains, cholics, anxieties of the heart, &c. (8.) A foetid urine indicates the salts and oils to be too much attenuated and dissolved, and almost putrified; and therefore is a formidable symptom both in acute and chronical disorders, and shews the cure very difficult. (9.) Thin skins and a mucous substance floating in the urine, shews a decay, waste and consumption of the parts. (10.) A fat and oily urine, though very rare, yet when it happens, denotes or threatens the phthisic and atrophy. (11.) An apparent coloured urine, without taste, loudly speaks the powers of nature destroyed, and death at hand. (12.) A pale, thin urine, with a gritty sediment, always denotes the gravel or stone in the bladder. (13.) A plentiful discharge of urine is accounted a favourable prognosis under all diseases, but the diabetes; as, on the other hand, (14.) A suppression, or partial evacuation thereof, is often a fatal omen; and argues the acute disease is not at its height, and indicates the paroxysm of chronic disorders will be of long continuance.

Hygieina, or
the doctrine
of preserving
health.

The prophylactic part of
physic.

How health
is affected
with alteration of the
non-naturals.

As of air.

Hygieina is the fourth great part of physic, and which treats of the ways and means of preserving health and life free from the insults and attacks of the molesting infinity of distempers; and though it be almost impossible to do this in perfection, yet by a careful and prudent conduct, men might enjoy their health with greater constancy, and know much less of the evils and miseries of life, which proceed from diseases, and ill habits of body, contracted in a great measure by luxury, intemperance, and irregular courses of life.

This prophylactic part of physic, as it is concerned in conserving health, and preventing diseases, doth mainly consist in a due use, application, and regulation of the non-naturals before-mentioned. But in regard to these, no such special rules can be given as shall exactly suit every particular man; for by reason of that idiosyncrasy, or peculiar habit of every man's constitution, which is not improperly called a second nature, no one regimen or manner of living can be prescribed for all men, or indeed scarcely for any two: therefore it is in the physician's power only to dictate some general things relating to the nature, properties, and effects of meats, drinks, air, motion, the passions, sleep, &c. as may be necessary for every man to observe. The principal doctrines of this kind are as follow.

To make a sudden change or alteration of one's common or customary way or method of living, place of abode, &c. to any thing new or contrary, is always and every where dangerous; even though it be from what is vulgarly thought evil, to that which is reputed good.

A dry, serene, which is always an heavy air, is the most wholesome to every man in his own place.

A cold and nitrous air, though it agrees with the robust, yet is pernicious to weak and infirm constitutions, by raising the contractions of the vessels too high, and thereby occasioning obstructions in the capillaries, which produce inflammatory fevers; as the pleurisy, St. Anthony's fire, &c.

A hot-sulphureous air is also apt to exalt the contractions of the solids extremely, and by its fiery particles to disturb, vitiate, and embarrass the actions of nature

nature to the last degree; from which origin arise inflammatory, petechial, nervous, epidemical, malignant, &c. fevers, so rise about July and August.

A damp, moist, foggy air, on the other hand, too much relaxes the vessels, and thence proceed preternatural cohesions and viscidities of the fluids, affecting the parts with scorbutic swellings, schirrosities, stubborn coughs, phthysics, and all those agues and intermittent fevers which pester mankind in the winter and spring seasons.

A diet of the most simple meats, void of feculency and acrimony, whose parts are not over active, similar to the sound body, and easy to be assimilated thereto, is the best and most wholesome of all others. Such are the frumentaceous seeds we eat in bread; the leguminous seeds, &c. as beans, peas, &c. the various sorts of herbs and plants we use for sallad, both roots and leaves; divers sorts of fruits; and lastly, the young, sound, and tender flesh of animals, and the broths made of it; as also milk and eggs.

In some constitutions, where the viscera are strong and robust, your soft, humid, tender, light, and pure aliments, are not so proper and sufficient as are the more dry, hard, gross, weighty, and feculent meats, which satiate hunger longer, and yield a more substantial nourishment.

In an alkaline temperature of body, a diet of acid substances, as seeds, fruits, roots, and leaves of vegetables, very much conduce to its well-being; and on the contrary, your alkaline animal diet is most advantageous for constitutions abounding with acid salts, since they temper and correct one another.

High-seasoned meats, and sauces of acids, salt, and aromatics, heighten the contraction of the solids above the standard of nature, and by their acrimony hurt the very fine vessels; and creating a false appetite, they rather load and surcharge the body, than nourish it.

That quantity of food is always best, that is followed by a sense of refreshment, and not of a torpid heaviness, or unaptness to motion; sobriety and temperance being always the indispensable means in order to health and longevity.

For

Drinks.

For Drink, cold, clear, light, tasteless, scentless, brisk running water, is best for a stout, robust constitution; if it be only intended to satisfy thirst, to replenish and dilute the humours, and to correct their acrimony. But if they are intended to warm and excite motion, and attenuate, then good fine beer, and clear, fragrant, and grateful wines, are very advantageous. A continual glut of juices being charged on the blood, destroys, in time, the tone and texture of the solids, and brings on asthma, dropsies, the gout, &c.

Exercise.

Exercise, in a moderate degree, is attended with the greatest advantages to health; but when excessive, it fails not to infer great damages to the constitution, especially in weak infirm people, and upon a full stomach. In hot, sanguine, and bilious constitutions, strong exercise is apt to excite fevers, pleurifies, and other inflammatory diseases; and all violent exercise is very dangerous, and has proved fatal to thousands.

Rest.

Rest, when opportunely taken, is very refreshing, as every one knows; but even this, if indulged to excess, that is, to idleness, perverts into a vice against both God and nature; in which case the vital actions flag and lose their natural vigour; and a gloomy attendance of diseases, as head-achs, vapours, hysteric fits, melancholy, swoons, vertigo's, &c. constantly await the inactive and sedentary life.

Sleep.

Sleep is a state wherein the body receives fresh supplies for recruiting the wastes made by carrying on the animal actions of the day; and every one finds the slumbers of the night are the sweetest indulgence of kind nature. But here again the extremes are pernicious; for if we are very watchful, and sleep little, the animal actions are depressed and enfeebled, the spirits exhausted and consumed, and deliriums, phrenzies, and madness itself, invade the constitution, till at last it is wasted and consumed: while, on the other hand, a sleepy, lethargic temper, impairs the solids, and renders their actions effete and languid, checks and damps the animal spirits, and creates vapours, crudities, viscidities, the scurvy, cachexy, with an universal waste of the whole body.

The

The passions and affections of the mind are absolutely necessary to the existence of human nature; but as in all things else, so here extremes (which are mostly on the excess) are of dreadful influence to the body; nothing being able to effect so great and sudden alterations in the vital and animal actions of the body, as the passions of the mind too much exalted, depressed, and disturbed. Even that noble passion joy, or gladness, can instantly kill by excess; and what numberless multitudes are constantly hurried down to the cold abodes of the king of terrors, Death, by his terrible prime ministers, grief, horror, despair, sorrow, anguish, care, fear, &c.!

From all which it plainly appears, that a due regulation of the non-naturals is that on which our health and life in a great measure depends, and ought therefore to be made the care and business of every man, as it is by all that are truly rational, wise, and sober.

Therapeutics is the last great part of physic; and its subject is the methodus medendi, or manner of curing diseases by proper medicines and remedies. When therefore the physician is called to the aid of a patient, before he sits down to prescribe, he first surveys the case of the patient, and accurately observes the symptoms, and thence infers the nature, cause, seat, and greatness of the malady; and consequently what is indicated to be done in order to the cure.

Of these indications there are reckoned four kinds, viz. (1.) The vital indication, which requires the preservation and continuance of life, or the actions of the vital faculties as they are in a sound body. (2.) The prophylactic or preservative indication; when somewhat is to be done to prevent the approaching disease by cutting off the cause thereof, and thereby preserving the body in health. (3.) The therapeutic or curative indication; this shews the necessity of removing the present disease by application of remedies. (4.) The palliative indication; which directs the mitigation or taking away some of the symptoms before the distemper can be wholly removed.

By these indications the mind of the physician is fully informed of the various intentions to be answered in order to effect a cure; and accordingly he applies himself

The passions.

Of therapeutics, or curative part of physic.

Four kinds of indication.

Of the materia medica.

The various classes of medicines.

Cardiacs.

Cephalics.

Stomachics.

Hysterics.

Alexipharmics.

Carminatives.

Agglutinants.

himself to the *Materia Medica*, and consults all the various classes of medicines to find those which are most proper to remedy the indisposition of his patient; and then prescribes them to be made for his use.

The diseases to which mankind is subject, are not more numerous than the remedies which nature hath providently supplied for their cure: the field of the *materia medica* is every way vastly wide and extensive; whence it is we find physicians so often boasting (as the vicegerents of nature) of their triple dominions, of the mineral, vegetable, and animal kingdoms. Hence they select and muster their numerous forces of medicines, and marshal them in various classes and regiments, always in a readiness to command against the potent and common enemy of human nature.

I shall just enumerate the principal sorts of medicines made use of in the present practice of physic, and distinguish them by names which indicate the intentions they are appropriated to answer by their peculiar virtues. They are as follow: (1.) Cardiacs or cordials; these raise the spirits, enliven the mind, comfort the heart, and add strength and chearfulness to the body, by increasing the springiness and force of the fibres, and the agreeable sensations excited by their aromatic and spirituous parts. (2.) Cephalics; under this class are comprehended all those medicines which are good for the distempers of the head. (3.) Stomachics are all those medicines that are serviceable to the stomach, which by a peculiar warmth give both a grateful sensation and a suitable tensity to its fibrous coats, and thereby also excite hunger and promote digestion. (4.) Hysterics, or uterines, are such medicines, as by their strong scent, whether sweet or foetid, prove serviceable in all disorders of the womb or hysterical affections. (5.) Alexipharmics, or antidotes, properly are such things as are given to expel poisons, or correct them so, that no mischief follow the taking them: but now alexipharmics signify any medicines good against fevers. (6.) Carminatives are such things as expel and dissipate wind or vapours pent up in any membranous or nervous part. (7.) Agglutinants, such as incrassate and thicken the humours, which are thereby rendered more consistent and fit for nourishment.

nourishment. (8.) Astringents are those medicines which are binding; and they act either by the asperity of their particles, which contracts, corrugates, and binds up the part; or else thickens the fluids, that they run not off so fast as before. (9.) Absorbents are such, as by the porosity of their parts, either cause the asperities of the pungent humours; or, like a sponge, drink up the superfluous moisture of the body; and thus they are said to be driers or sweeteners of the blood. (10.) Analetics are such as cherish the nerves, and renew the spirits and strength. These four last are called strengtheners. (11.) Emollients are such as sheath and soften the asperities of the humours, and relax and supple the solids at the same time. (12.) Restoratives; these are near a-kin to the agglutinants, but being of a more subtil and adhesive nature, they pass the finest strainers or secretions, and enter into the nourishment of the remotest parts, repairing the wastes of the constitution. (13.) Deobstruents are such medicines as are peculiarly adapted by their weight to open the obstructions of the fluids in the capillaries, by increasing their momentum, and causing them to strike with greater force against the secretory outlet. (14.) Diuretics are those medicines whose remarkable property it is to increase the discharge by urine, by removing obstructions of the urinary passages, from what cause soever: and this they do, either by softening and lubricating the parts; or by attenuating and rarifying the viscous humours; or, lastly, by altering the crasis of the fluids, so as to fit those to pass which could not get through before. (15.) Diaphoretics are those which procure sweat, by dividing and attenuating the humours so far, that they become fine enough to escape through the smallest passages, as those of the cutaneous glands; or else by their contracting and squeezing the solids, which force out of the extremities what lay in readiness before to go off. (16.) Emetics are all those medicines which, by their stimulus, do so vellicate and irritate the fibres of the stomach, as to make the coats contract, and forcibly throw up the contents by vomiting. (17.) Cathartics are medicines which purge by stool; they have the same qualities as the emetics, but in a lesser degree, and therefore pass into the intestines

Astringents.

Absorbents.

Analetics.

Deobstruents.

Diuretics.

Diaphoretics.

Emetics.

Cathartics.

Sternutatories

Narcotics.

Refrigerants.

An alphabetical catalogue of diseases.

testines before they can produce their effects. The milder purges are called laxatives, but the rougher ones draffics. (18.) Sternutatories are such medicines as by their stimulus vellicate the membranes of the nostrils, excite sneezing, and by a violent concussion of the head and body, produce an evacuation of troublesome humours by the glands of the mouth and nose. (19.) Narcotics, hypnotics, or opiates, are all names for those things which have the property of causing sleep, which they effect in a manner not easy to be explained or accounted for. (20.) Refrigerants, or coolers, are such as produce an agreeable sense of cold, and mitigate the heat and drought of the mouth, stomach, and other of the primæ viæ.

There are other titles of medicinal classes of remedies, but not worth rehearsing; these here mentioned being the most common and considerable. I shall now conclude this chapter by an alphabetical catalogue of those diseases or illnesses which generally vex and molest the whole and every part of our crazy constitution.

Abortion, an immature birth, or before the embryo is completly formed and fitted for exclusion.

Acraſy, a debility from the lost tone of the parts.

Ague, an intermittent fever, attended with alternate fits of heat and cold; proceeding from an increased velocity and viscosity of the blood.

Anthony's Fire. See Erysipelas.

Apoplexy is a sudden deprivation of all internal and external sensation, and of all motion except of the heart and thorax; caused by an obstruction of the animal spirits in the nerves.

Asthma is a frequent, difficult, and short respiration, joined with a hissing sound, and a cough; proceeding from an ill state of the lungs, wherein they cannot exert themselves freely, in dilatation and contraction,

Atrophy, an insensible waste or decay of the animal body, for want of nourishment.

Barrenness. See Sterility.

Bloody Flux. See Dysentery.

Cachexy, a bad habit of body, when the viscera are unsound, and the juices distempered.

Cacoehymy, a vitiated state of the juices.

Calenture,

Calenture, a sea-disease, wherein the sea appears as pleasant as green fields.

Cardialgia, the heart-burn, proceeding from the acrimony of some explosive matter in the stomach.

Catarrh. See Defluxion.

Chlorosis, the green-sickness, which arises from a cold heavy blood, and to be cured chiefly by exercise.

Cholic, an acute and painful disorder of the bowels, arising either from the acrimony of too much bile; or from flatulents, or wind pent up; or from some disorders of the womb; or, lastly, from some disorders of the nervous fluid in the coats of the guts themselves; and accordingly it is said to be bilious, flatulent, hysterical, and nervous.

Consumption, a decay of the body by a waste of the solids or muscular flesh, and is of several kinds.

Convulsions consist in an involuntary contraction and contortion of the fibres and muscles, whereby the body and limbs are preternaturally distorted.

Cough is the effect of a convulsive motion of the muscles, and parts of the abdomen, thorax, and throat.

Cramp, a convulsive contraction of the muscles of any part.

Crapula, a surfeit proceeding from too much eating and drinking; attended with heaviness and disorders of the head.

Defluxion, a flowing of sharp serum or rheum from the glands of the head and throat, occasioned by a cold, and causing irritations, coughs, &c.

Delirium, light-headedness, a disturbed sensation arising from a violent disorder of the brain and spirits.

Diabetes, a profuse or too great discharge of urine.

Diarrhoea, a looseness, or flux of the belly.

Dropsy is a preternatural secretion of the serum or water, which lodging in the constitution, distends and weakens the parts; and proceeds from too lax a tone of the solids.

Dysentery, a flux of ill humours by stool, and sometimes attended with blood.

Dispepsy, a bad digestion in the stomach.

Disury, a difficulty of making urine.

Elephantiasis. See Leprosy.

Epilepsy

Epilepsy is a convulsive motion of the whole body, or some of its parts, with a loss of sense.

Epiphora, a defluxion of humours on the eyes.

Erysipelas, a cutaneous inflammation, attended with great pain and swelling.

Fever is an increased velocity of the blood; the almost infinite variety of its causes occasions almost as great a diversity of its appearances and effects; it is always attended with heat, sickness, debility, acute pains, and sometimes with deliriums and madness. There are several kinds, as inflammatory, intermittent, hectic, nervous, &c.

Flux. See Diarrhœa.

Freckles. See Lentigo.

Glaucoma, a change of the natural colour of the eye without detriment to the sight.

Gonorrhœa, an involuntary flowing of the seed, from the ulcerated glands of the prostaticæ and lacunæ.

Gout, a painful distemper, consisting of hard concretions of matter in the extreme parts of the body.

Gravel, a disorder in the kidneys or bladder, wherein stony concretions, like pebbles, are voided by urine.

Green-Sickness. See Chlorosis.

Gripes, the same as cholic pains.

Gutta Serena, a dimness of sight, or confused vision of flies, dust, &c. yet no defect of the eye is to be seen.

Hæmorrhage is a flux or bursting out of blood from any part, proceeding from a plethora.

Hæmorrhoids is a bleeding or painful swelling of the hæmorrhoidal veins about the fundament.

Heart-Burn. See Cardialgia.

Hectic, a slow continual fever that ends in a consumption.

Head-Ache. See Pain.

Horror, such a shuddering and quivering as precedes fits of an ague.

Hydrophoby, a fear of water, a symptom that follows the bite of a mad dog.

Hypo, any disorder of the liver and spleen; and womb in women. See Melancholy and Vapours.

Hyfteric

Hysteric Passion, fits of the mother, or disorders of the womb, which frequently bring the whole nervous system into disorder also.

Jaundice, a distemper from obstructions of the glands of the liver, which prevent a due secretion of the gall; which therefore being carried through the habit of the body, tinges the extremities with yellow.

Iliac Passion, a kind of nervous cholic, wherein the colon is twisted, or one part enters the cavity of the other.

Inappetency, a loss or want of appetite.

Impotency, the inability of males to impregnate the females, from a weakness of the genital parts.

Incubus, the night-mare or asthma, proceeding from some obstruction of the blood-vessels in the thorax, or of respiration.

Inflammation, a swelling with great heat and pain.

Intermittent Fevers. See Ague.

Ischias, the hip-gout.

Ischury, a stoppage of urine, by stone, gravel, &c.

Itch, a cutaneous distemper, proceeding from sharp humours which corrode the miliar glands.

Lentigo, a freckly or scurfy eruption upon the skin.

Leprosy, a dry, white, scabby eruption, in the manner of scales on the skin.

Lethargy, a distemper attended with the loss of the rational, at least the retentive faculties of the mind, and an inaptitude to motion.

Leucorrhæa, the fluor albus, or whites in women.

Lientery, a looseness, wherein the aliments are voided with little or no alteration.

Lypothymy, a fainting or swooning away.

Lithiasis, the stone or gravel.

Lues Venerea, the pox, or foul disease.

Lumbago, troublesome pains about the loins.

Lunacy, a kind of frenzy, or disorder of mind.

Madness is a delirium without a fever, or state of mind wherein the ideas are received without any natural order or coherence, and produce uncommon effects.

Malacia, a depraved appetite.

Mania. See Madness.

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Melancholy,

Melancholy, a dull and gloomy disposition, arising from too heavy and viscid a blood, and paucity of animal spirits.

Measles. See Small-Pox.

Miasm, a contagious scent from diseases, &c.

Miserere Mei, sharp cholicky pains, so called.

Morphew, the freckles.

Myopy, purblindness.

Nausea, a loathing of food, &c.

Nebulæ, films or little clouds in the eye.

Nephritis, the stone in the kidneys.

Noli-me-tangere, a very sore tetterous eruption.

Obstructions, stoppages in the vessels of any sort.

Ophthalmy, an inflammation of the tunica adnata of the eye, attended with redness, heat, pain, swelling, arising from a stagnation of the blood in the capillary arteries.

Orthopnæa, a great difficulty of breathing.

Pain is an uneasy sensation arising from a solution of the continuity of the parts of nerves and fibres, which is proper to their natural and sound state.

Palpitation, a beating, a panting of the heart.

Palsy is a privation of motion, or sense of feeling, or both, proceeding from some cause below the cerebellum, joined with a coldness, softness, flaccidity, and at last a wasting of the parts.

Peripneumony, an inflammation of some parts of the thorax, which occasions a great pain and shortness of breath, and generally goes off by expectoration, &c.

Pernio, a kibe or chilblane.

Pestis, the plague or pestilence, which see.

Phrenitis, the phrenzy, which is a species of madness.

Phthisis, the phthific, a waste or consumption of the body, very various both as to its causes and kinds.

Piles. See Hæmorrhoids.

Plague is the most malignant, acute, and mortal, of all the nervous fevers; and is communicated by contagion.

Plethora is when the humours are secreted in too great an abundance, or beyond what a healthy state requires.

Pleurisy,

Pleurisy, an inflammation of the pleura, proceeding from a stagnation of blood, and producing very intense pain.

Poison, a most virulent, corrosive, and destructive quality in several things, causing great swelling, pain, and death.

Pox, a disease, deservedly, though too well known.

Quartan, a third day's ague.

Quinsey, an inflammation of the jaws and throat.

Rheumatism, a distemper of the common membrane of the muscles, which makes it rigid, and unfit for motion, without great pain.

Rickets, a distemper in children, proceeding from an unequal distribution of nourishment; which makes the joints grow knotty, and the limbs uneven.

Scab. See Itch.

Scrophula, the king's-evil; and proceeds from an obstruction and erosion of the glands.

Scurvy, a disease proceeding from a blood unequally fluid, and somewhat corrosive.

Shingles, a kind of corrosive, cutaneous inflammation.

Small-pox, a contagious distemper breaking out on the skin in numerous pustles, which ripen into a scab.

Squinacy, the same as Quinsey.

Sterility, barrenness, which arises from various causes.

Stitches, acute pains in the side.

Stone, a concretion of the harder parts of the urine in the bladder.

Strangury, a difficulty of urine attended with a continual dripping.

Struma, an induration of the glands; the king's-evil.

Surfeit. See Crapula.

Syncope, a sudden fainting or swooning away.

Tabes, a consumption, or decay of muscular flesh.

Tenismus, a continual inclination to go to stool, but ineffectual.

Tentigo, a continual painful erection of the yard.

Tertian, an ague intermitting but one day.

Tremor, an involuntary trembling of the nerves.

Tumor, any kind of swelling.

Tympany, the dropfy, which fwells the abdomen like a drum.

Vapours, the diforders of the viscera of the hypochondria.

Vertigo, giddinefs; a diforder of the brain, wherein things at reft appear to move round.

Ulcer, any running fore.

Vomiting, a cafting up the contents of the ftomach, from an irritation or vellication of its coats.

Whites. See Gonorrhœa.

Xerophthalmia, a diftemper otherwife called the dry lippitude, where the eye-lids turn out red and dry.

S U R G E R Y.

Surgery defined.

Chirurgery, or (as it is commonly called) Surgery, is the art of the chirurgeon or furgeon; and is that branch of the art of healing, which is performed by manual operation, and with proper instruments.

A furgeon, his qualifications.

A furgeon therefore is one who has a tolerable skill in anatomy, medicine, and other parts of learning; a man of good experience, great dexterity, an unshaken courage, and steady hand; a clear fight, quick thought, and of an ingenuous and honest mind.

In furgery we confider (1.) The fubject of the art, difeafes. (2.) The manner of cure. (3.) The medicines appropriated thereto. (4.) The manual operations. (5.) The instruments ufed therein.

Divers kinds of diforders.

Thofe difeafes which afflict the human body, and demand the care and affiftance of the furgeon, are of the following kinds. (1.) Tumours or fwellings. (2.) Ulcers, or running fores. (3.) Fiftula's. (4.) Inflammations, or ftrumous diforders. (5.) Wounds. (6.) Gangrena's, or mortification. (7.) Diflocations. (8.) Fractures, or broken bones.

Tumours. General caufes.

Affluxion. Congeftion.

Tumours are generally occafioned by a preternatural quantity of humours on the part, either by a fudden and violent courfe, called affluxion; or elfe by little and little, called congeltion. But thofe tumours which confift of a collection of pus or matter, are called apoftems or impofthumes; and any tumour is called an abfcefs.

The

The causes of tumours are various; as a contagious air, hard bandage, blistering, wounds and bruises, ill humours, flatuosities, inflammations, &c. Particular causes.

Tumours may be distributed into the following kinds. (1.) Phlegmonic, or inflammatory; as the ophthalmia in the eye; angina or quinsy in the throat; the pleurisy in the pleura, or side of the breast; a peripneumony in the lungs; a bubo in the groins, &c. (2.) Odematous, or cold aqueous tumours; of which some have their matter contained in a cystis or bag; as the atheroma, steatoma, and meliceris: others not, as psyracium, ficus, talpa, nata, lupia, ganglion, &c. (3.) Scirrhus tumours, which consist in an induration of the glands, from gritty, obstructed matter; as happens to the liver in a jaundice, or the like. Such an induration is called indifferently by the names scirrhus, scirrhoma, and scirrhosis. (4.) Aqueous tumours, such as proceed from a preternatural redundancy, or an extravasation of the serum of the blood in the outer parts of the body; which in the head is called hydrocephalus; in the belly, ascites; in the scrotum, hydrocele, or hernia aquosa. (5.) Strumous swellings, which proceed from an obstruction and erosion of the glands, the matter whereof is contained in a cystis; this sort of tumour is various in its nature, and called the struma, scrophula, or king's-evil, from an idle conceit of its being curable by the royal touch. The kinds of tumours. Phlegmonic. Odematous. Scirrhus. Aqueous. Strumous or scrophulous.

Ulcers are the next class of diseases above recited, and are defined to be a preternatural discharge of matter of various kinds, from a solution of continuity or texture of the part, with loss of substance. This solution proceeds from some distempered humours, eroding the part by their virulent particles, or from wounds, &c. which in time degenerate to ulcers. Ulcers.

Of ulcers, the more simple affect the skin and cuticle only, but others reach deep into the flesh. Of ulcerous disorders are reckoned the following. (1.) The herpes exedens, which riseth on the skin in little tubercles, and with ulcerous orifices, containing a very corrosive and penetrating matter. (2.) Phagedæna, which lies deep, with tumified lips, and erodes the part by corrosive humours. (3.) Noma, a feeding Several sorts. Herpes. Phagedæna. Noma.

Cancer.

Lupus.

Noli-me-tan-
gere.

Achor.

Favus.

Ozæna.

Fistula's.

Inflamma-
tions.

Wounds.

Gangrenes.

or consuming ulcer, which brings on a putrefaction of the part. (4.) Cancer, or carcinoma, a direful sort of ulcer, too well known. (5.) Lupus, or wolf, a devouring ulcer of the phagedænic kind, in the thigh or leg. (6.) Noli-me-tangere, a sore scabby ulcer, difficult to cure. (7.) Achor, a scabby ulcerous tumour, in the skin of the head. (8.) Favus, an ulcer with matter resembling honey. (9.) Ozæna, a malignant ulcer in the nostrils, eroding the parts, and very difficult of cure.

Fistula's are but old ulcers, with callous lips, penetrating with sinous cavities even to the bones, which are rendered foul and sanious by the foetid virulent matter of the fistula: for a fistula lies deep, and ouzes out its matter through long, narrow, winding passages, like pipes, whence their name. So when the tumour in the great corner of the eye, called anchylops, or ægylops, is neglected, it produces the fistula lachrymalis; from a phlegmon in the breast ill cured comes the fistula thoracis; and an inflammation in the fundament often degenerates to a fistula in ana.

Inflammations and strumous disorders proceed from an obstruction of the blood-vessels, whereby the blood is crowded in a greater quantity upon the part, and so receives a greater colour and heat than is usual, and by eroding the glands, produces all kinds of strumous or scrophulous indurations and distempers of those parts, most of which have been already mentioned.

Wounds make the fifth class of human disasters, which come under the surgeon's care. A wound is defined to be a solution of continuity in any part of the body. Under this denomination are reckoned (1.) Cuts and incisions. (2.) Punctures by sharp-pointed instruments. (3.) Contusions or bruises by any external violent force impressed. (4.) All gun-shot wounds. (5.) All sprains or strains occasioned by a forcible and violent tension or stretching of the part beyond its natural tone or tenour, attended with pain, debility, and inflammation.

Gangrenes and mortifications make the next part of the tragedy of human life. A mortification is when the natural heat of a limb is in part extinguished, and therefore the limb in part rendered insensible, discoloured,

coloured, and cold. But when the natural heat is quite extinct, &c. it is called a sphacelus, or sphacelation; in this case the natural juices having lost their proper motions, fall into a fermentative one, and thus corrupt and destroy the texture, and vital state, and functions of the part affected; which then is said to gangrene, mortify, or be sphacelated.

Dislocations are disorders respecting the bones, and are sometimes called luxations, and are when any bone becomes disjoined, or put out of its natural place and situation; which is caused by various accidents, and may happen to almost all the articulations of the bones. Dislocations.

Fractures of the bones make the last division of chirurgic disorders. The fracture of a bone is a solution of continuity, or of the texture and cohesion of its substance in any part. This may be transversely, across the bone; or longitudinally, along the bone; or obliquely, between both. Fractures are simple, or such as happen without a wound; or else compound, as when they are attended with wounds; and these are most dangerous, and the more so as they are in a larger bone, and nearer the joint. Fractures.

In the curative part of surgery, the intentions and manner of cure are various, according to the nature of the distemper, and the circumstances thereof. However, the principal intentions are as follow. (1.) Derivation, or drawing the humours away (which threaten any noble part) to the parts adjacent, or on the same side. (2.) Revulsion, which is a drawing away the humours to the opposite side or part. (3.) Discussion, which is an evacuation of thin peccant matter by perspiration, or by repelling the humours back into the mass of blood. (4.) Resolution, or changing the humours from a peccant to a salutary state. (5.) Suppuration and maturation signify the ripening or bringing the matter of the tumour into pus, or laudable matter. (6.) Digestion, which is the promoting a discharge of suppurated matter by proper medicines. (7.) Mundification, which is a deterging or cleansing the tumour after the matter is discharged, and fitting it for (8.) Incarnation, or healing and filling it up with new flesh. (9.) Cicatrization, which The curative part of surgery.

is the inducing a skin upon the sore now cured, so as to leave as small a cicatrix, or scar, as possible. These intentions principally regard tumours, ulcers, wounds, &c. in the flesh; besides which there are many which respect the bones, and therefore will be next taken notice of among the manual operations. And indeed what is performed by the hand makes the principal part of the surgeon's art, and gives denomination to the whole. The chief operations performed by the surgeon's hand are as follow. (1.) Amputation, which is the cutting off any limb or part from the body. (2.) Arteriotomy, letting blood by cutting an artery. (3.) Phlebotomy, the same by cutting a vein. (4.) Bronchotomy, an incision made in the wind-pipe, to prevent suffocation in a quinsy. (5.) Cæsarius, a cutting the child out of the womb. (6.) Castration, a cutting out the testicles. (7.) Cauterising, a burning or scarring any quick part with cauteries, to prevent mortification, &c. (8.) Cupping, a raising the cuticle from the skin, in order for scarification. (9.) Cystomaty, a cutting or opening the bladder, to extract the stone. (10.) Fongiculation, a cutting or making issues, seatons, &c. (11.) Lancing, making an incision in any part with a lancet. (12.) Lithotomy, a cutting for the stone. (13.) Scarification, a cutting of blistered skin with a lancet. (14.) Suture, a sewing of the lips of wounds, &c. (15.) Tapping, a perforating the skin of the abdomen, for discharging watery humours, in the dropsy, &c. (16.) Trepanning, which is the opening a fracture in the skull by an artificial perforation. (17.) Reduction is the replacing of dislocated, and setting of fractured bones, by means of proper ligatures, bandages, and other external applications.

The medicines used in surgery.

The surgeon, as well as the physician, is obliged to make use of medicines to answer most of his intentions, and such, in this case, are called topical applications; these consist chiefly of plaisters, cerates, unguents, oils, infusions, &c. and are (according to their quality) distributed into the following kinds. (1.) Abstergents, or detergents, which cleanse the wound, and dispose it for healing. (2.) Anaplerotics, sarcotics, and incarnatives, all which signify such medicines as

heal

heal and fill up the wound with flesh. (3.) Anodynes, such as assuage pain. (4.) Aperients, the same as detergents nearly. (5.) Balsamics, oily healing remedies. (6.) Caustics, or cauteries, are such as sear or burn the flesh to an eschar. (7.) Desiccatives, which dry up and skin over wounds, &c. (8.) Digestives, such as promote the digestion of matter in tumours. (9.) Epulotics, which cicatrize and skin over wounds. (10.) Escharotics, the same as caustics. (11.) Lithon- triptics, which break the stone in the bladder. (12.) Narcotics, those which stun the sense of pain. (13.) Palliatives, such as are used to palliate incurable wounds, &c. (14.) Phagedænic, which eat away the proud or fungous flesh. (15.) Repellents, such as disperse the matter of tumours, and assuage swelling. (16.) Resolvents, which open, loosen, or promote the resolution of matter. (17.) Ripeners, such which ripen, draw, and fit matter for a discharge. (18.) Sclerotics, such as harden and consolidate the flesh of new-cured wounds. (19.) Styptics, such as are very binding and astringent, sufficient to stop hæmorrhages, &c. (20.) Suppuratives, which promote the suppuration of the matter of tumours. (21.) Topics, all external applications of medicines. (22.) Traumatic, or vulneraries, all medicines good for wounds. (23.) Vesicatories, such things as occasion blisters to rise on the skin. (24.) Xerantics, the same as desiccatives, or drying medicines.

For manual operations the surgeon is provided with a terrible apparatus of the instruments of fate and necessity: the chief of which I shall just name as follows. (1.) Acantabolus, to draw out splintered bones, hairs, &c. from wounds. (2.) Amma, a kind of girdle or truss. (3.) Bathrum, contrived for the ease and security of the luxated joints after reduction. (4.) Catheter, an hollow instrument to put up the penis into the bladder, to assist in making urine, in case of the stone and gravel. (5.) Actual cautery, a red-hot iron for searing any part. (6.) Potential cautery, any caustic medicine. (7.) Glyster-pipe, well known. (8.) Cucurbitula, a cupping-glass. (9.) Cycliscus, in the form of an half-moon, to scrape away rottenness withal. (10.) Dentagra, to draw teeth

Instruments used in the manual operations of surgeons.

teeth withal. (11.) Dentiscalpe, to cleanse the teeth with. (12.) Forceps, like a pair of tongs, to extract any thing out of wounds, &c. (13.) Forfex, to extract or draw teeth with. (14.) Lancet, an instrument well known. (15.) Modiolus, that part of the trepan which cuts the bone circularly. (16.) Perizoma, trusses to keep up ruptures. (17.) Probe, a small long instrument to search the wounds with. (18.) Retinaculum, used in castration, cutting hernia's, &c. (19.) Rostrum, crooked scissars, like a bird's bill. (20.) Sanguifuge, a leech. (21.) Scala or ladder, an instrument for resting and defending dislocated and broken limbs. (22.) Scarificatory, used to make scarification, being a number of sharp points, set on a plane, which are all struck into the part at once. (23.) Speculum, an instrument to open and dilate any passage or orifice, in order to inspect the same. (24.) Spatula, a little instrument for spreading plaisters, &c. well known. (25.) Syringe, used for injecting medicated liquors up into any part. (26.) Tenaculum, somewhat like the forceps. (27.) Terebra, terebellum, or trepan, an instrument used for cutting away the fractured parts of a bone, particularly of the skull. (28.) Vectis, used as a supporter or prop in reducing dislocated, or setting fractured bones.

There are divers other chirurgical instruments, of which I know not the names; besides the divers sorts of knives, saws, scissars, &c. in common use, which are too well known to need description.

Of POLITY and OECONOMICS.

MAN only, of all other creatures, is endowed with faculties that render him a social being, or capable of converse, commerce, government, law, the rules and notions of right and wrong, and the sanctions of rewards and punishments. Accordingly mankind have universally, from the first ages of the world, used to associate themselves together, to form companies, and to unite in societies.

Society therefore is a property of human nature, as consisting of a certain number of persons who all agree and combine mutually to conserve, defend, promote, and enjoy one common interest, according to certain terms, orders and regulations, first stipulated and agreed upon mutually by the whole society.

According to this definition of a society, it is plain they may be infinitely various, as they consist of various numbers of members, pursue different interests and views, and are founded on and regulated by divers institutions and rules. I shall here only take notice of those societies which pass under the three following remarkable denominations, viz. (1.) A family. (2.) A city; and (3.) A republic, commonwealth, or nation.

A family is an household of persons, or those who live together in one house; and are generally of three sorts of personages; as, (1.) Parents, or those who beget and bear children, with us called fathers and mothers. These are said to be the stock and heads of families. (2.) Children, which are begotten and born of the parents; and as they are male and female, are called sons and daughters. (3.) Servants, which are those who serve or do the work of the family, on conditions of advantage or profit, called wages or hire. By the word Family is sometimes meant the genealogy, pedigree, lineage or descent of a particular family from the first of the race, and in this sense they are called kindreds;

kindreds; but this is foreign to our purpose here, and therefore shall pass it by.

A city.

A city is a society of people incorporated into a body; enjoying certain peculiar privileges, liberties, and immunities, living in a large walled town, or the liberties thereof, where there is a cathedral church, and a bishop's see; and are all governed by the same laws. If the town be not walled about, nor hath a cathedral or bishop's see, it is called a town corporate, or a corporation, but not a city, of which there are abundance in England. A city therefore consists of divers families, and hath the same relation thereto as a whole to its parts.

A republic or nation.

A republic, commonwealth, or nation, is a multitude or society of people inhabiting the same land, having the same name, speaking the same language, and enjoying the same laws, religion and government: though the words Republic and Commonwealth respect the form of government rather than the subject, or people. As cities and towns consist of families or houses, so a nation is made up of cities and towns, as also of many villages and particular houses, situated over the face of all the open country of that nation.

The requisites to constitute a society.

All those societies, as has been said, are bodies politic, or subject to certain orders, rules, laws, and government; and in order to constitute such a society or body politic, the following things are necessary. (1.) Such a community or society must consist of men, or rational, not irrational beings. (2.) There must be a plurality or multitude of them, viz. of persons, houses, or cities. (3.) They must associate and unite together; for they make up this body not severally, but as joined together in one. (4.) They must enjoy a community or participation of many particular things, and one general interest, common to the whole. (5.) It must be instituted by the general consent of a free people, and therefore it is voluntary. (6.) It must be just and reasonable; for there can be no honourable and true society or commonwealth of men bent on wicked purposes; as thieves, pirates, conspirators, murderers, seditious persons, &c. for they are supposed to be bound to observe certain rules of eternal justice and reason, and therefore the things wherein they

they unite, and the manner of their uniting, must be both just; and the more they are so, the more excellent and perfect the commonwealth and ordination thereof will be.

Government, or that form and order of rules and laws by which the affairs of societies are administered, regulated, and directed, is various, according to the nature of the society, the relation of the members to each other, the person or persons who administer the republic, and the manner of the institution. Government, what.

A house or family being in nature prior to all other societies, I shall begin with the government thereof. Oeconomy, what.

This, in regard of the house, the Greeks called Oeconomy, and the arts which delivered rules thereof, they called Oeconomics; but in regard of the person in whom the power of ruling and governing the family was lodged, they called it patriarchy, and the manner of it patriarchal; because the father of the family being the principal person therein, administered and governed the affairs of the house; as the law and dictates of nature and reason directed.

Oeconomics therefore is that part of moral prudence which gives rules and directions for the due and well ordering and governing a family or household of people, in the administration of all the affairs and business pertaining thereto. And as in a family it considers a threefold state of relation, viz. that of husband and wife, parents and children, master and servants; so it lays down and supplies such laws and rules as direct the conduct, and shew the duties incumbent on each person reciprocally in his respective state and relation. Oeconomics, what.

The first of these three relative states is called the conjugal or matrimonial state; because the relation of a husband and wife commences from their mutual contract, covenant, and agreement to associate, unite, cohabit, and hold a common participation of the fortune of life so long as they both shall live; which public and solemn action is called matrimony. Conjugal state

The laws which respect the husband, and the duties and offices enjoined to be performed in regard of the wife, are as follow: (1.) That he love her, and delight in her company and society more than in any other woman's. (2.) That he nourish and sustain her with The duties of an husband.

with the best their fortune affords for the sustenance of life and health. (3.) That he duly perform the duties of the marriage bed, or render to the wife due benevolence; and that ever according to the dictates of reason and prudence. (4.) That he keep his plighted faith in allowing her the sole property and use of his body, and abstaining religiously from all adulterous commerce with any other of her sex. (5.) That he teach and instruct her in the duties of religion, and the more difficult affairs of life, when she appears to need it. (6.) That, lastly, he rule and govern her by the laws of prudence and reason, and in such a manner, that more of love, humanity and kindness, may appear, than of power and sovereign authority. In short, every act of the husband should be such as might tend to demonstrate, that he is not willing to shew himself so much her ruling lord, as her loving husband; and more desirous of her love, affection, and esteem, than her fear and submission.

The duties of
a wife.

The duties and offices of a wife towards her husband are, for the most part, the same as those just enumerated of the husband towards the wife; but particularly, that she love, honour, and assist him, not only in bearing children and educating them, but in taking on her a part of the administration of domestic affairs; and moreover, that she be modest, chaste, and submissive in all cases where the superior wisdom and judgment of the husband shall require it. And on the side both of man and wife, the nature of such a strict conjunction requires that they be mutually partakers of each other's fortune, whether prosperous or adverse, and to comfort each other in their calamity; and that they should both so attemperate their behaviour and manners with prudence and wisdom, as should best conduce to peace, harmony, and mutual forbearance; in respect of which, however, it is adjudged most becoming the wife to yield.

The power of
parents.

With regard to the second relation of parents to children, it is evident they, as being their offspring, are the most immediate subject of patriarchal power, according to the most antient and holy institution and form of government; by which they are obliged to honour and obey their father and mother, and to ob-

serve

serve and perform their lawful commands. And since both father and mother concur to the generation of children, they have each a property in and power over them. But this power extends not to life and death, though in cases ever so criminal, but only to proper correction and castigation; for when children are grown adult, and pertinaciously contemn the paternal care, power, and government, they are to be delivered up to the superior power of the city, or nation, if any such be extant; if not, they are to be expelled and abdicated their father's house.

The duties of parents concerning their children are principally such as these, viz. (1.) That they feed, cloath and nourish them, while young and helpless, in a proper manner. (2.) That they take care to educate them in all useful knowledge and learning. (3.) That they bring them up in the nurture and admonition of the Lord, that is, in the christian religion. (4.) That they imbue their minds with the principles of virtue and morality while young and flexible, and inure them gradually to the practice thereof. (5.) That they infuse and implant in their minds an early sense of moral evil, and bring them to an habitual abhorrence of all vices and immoralities. (6.) That they give them suitable reproof, correction, and restraint, for and in consideration of all vicious, ungodly, and vain practices, and by all means possible cause them to forsake the same. (7.) That they teach and instruct, or cause them to learn, some honest art, faculty, or employment, for their future dependence and support of life. (8.) That they give them wholesome and prudent advice in all difficult and momentous affairs, as in chusing an husband or wife, profession of religion, bargaining, &c. though in these cases the parent has no power or right to oblige the child to fulfil his will or desire. (9.) Lastly, that they take all proper care to augment, improve, and promote their children's fortune and prosperity in every respect.

The duties of parents.

The duties of children towards their parents are, The duties of children,
(1.) That they love, honour, and obey them in all their civil and reasonable commands. (2.) That they serve them with all readiness and submission in the business of their calling. (3.) To use all reverent, submissive,

submissive, dutiful language to them on all occasions; and to refrain contradiction and obloquy of every sort. (4.) To deport themselves always with a respectful, filial, and dutiful behaviour, such as may express a sense of the obligation they are under to their parents, as the immediate authors of their beings, and all proper sentiments of gratitude and honour which naturally result from such a consideration. (5.) To do nothing without their advice or counsel, at least not contrary thereto, in matters merely human, and of civil concern. (6.) In matters of religion they ought to keep a conscience void of offence towards God and man, and to profess that form which they judge to be most pure and agreeable to the institutions of Christ, whether their parents profess the same or not; for in this case they are obliged to obey God rather than man, though a father or mother. (7.) They ought to bear with a becoming patience the oddities, perversities, vices and imperfections (if any) of their parents; and endeavour to hide and extenuate, and not expose them to the world. (8.) To support and succour their parents in case of old age, poverty, or other circumstances which may require their assistance. He must be an unpardonable wretch, a monster of human nature, who can see his father that begat him, his mother that bare him, live in the want of any thing in his power to supply them with.

Of masters
and their
power.

The third and last kind of relation in a domestic society, is that of masters and servants. In all ages masters of families have found it not only convenient, but necessary, to procure servants to take care of and perform the laborious part of their domestic affairs and business. And on the other hand, necessity and want have obliged many to apply themselves to others, and agree to serve them for food, raiment, or money to procure the same and other necessities of life, which conditions are called wages or hire. But these things are only to be found in a free nation; in others, servants are either purchased with money, and are then called slaves; or are taken in war, and are then called captives; and their condition a state of slavery and captivity. In a free country, as England, the condition of servants is so voluntary, and, with respect to
time

time and masters, so much in their choice and power, that it can hardly be called a state of thralldom or servitude, but rather of free service, if the expression can be allowed.

The office and duties of masters towards servants are, (1.) To be mild and gentle in their behaviour to them. (2.) To be reasonable in their demands and injunction of services upon them. (3.) To allow them proper diet, rest, &c. necessary to enable them to perform their work and service. (4.) To give them wholesome advice and instruction, and to reprove them for vice, follies, for negligence in business, &c. (5.) To teach them fully, and without reserve, the art and mystery of the trade or business they are to learn. (6.) To pay them justly and duly the wages or hire agreed for when it becomes due, or when after the servant shall demand it. (7.) In all respects a master ought to do to his servant as he himself would chuse to be dealt with, were he in a servant's circumstances.

The duties of masters.

The duties of a servant to his master or mistress are very obvious; as, (1.) To obey them well in all things of a civil concern. (2.) To be diligent in business, not slothful, nor serving with eye-service. (3.) To be faithful and trusty in the discharge of all the trusts reposed in them, and in executing all orders and commands. (4.) To be honest and just, not purloining or squandering away their masters goods clandestinely. (5.) To be quiet, peaceable, and patient under reproof, and to avoid all obloquy and recrimination. (6.) In short, they ought so to demean themselves as they would expect servants should do were they in the master's place. Thus much may suffice for Oeconomics, or household government.

The duties of servants.

The second sort of society mentioned, was that of citizens, or people living together in cities and towns corporate. And because this is a collective idea, or consisting of divers simple societies or families, it is impossible but that a very different form and order of laws, rules, and government, should be here instituted and exercised, from œconomy, or that of a family; for of various families combined and united, there must needs arise a compound interest, and various relations,

Of civil societies.

Polity and
politics.

tions, which require very different methods to settle and regulate, than do those of a single family.

And since the Greeks (from whom we receive the terms and art of government) called a city, in their tongue, Polis; therefore the government was called Politia, or polity and policy; and thus books which treat thereof, or the art itself, are called politics; and those who are skilled therein, politicians.

A republic
or common-
wealth,
whence.

Also since a nation or commonwealth is but a spot of earth, or a land wherein are many of those cities and towns, united in a common interest, and ordered and governed by the same laws, it came to pass, that the rule and governance of any nation or land came to be called the policy of that land or country; and because of the common-weal or good, or public affairs, respected and conserved thereby, it was indifferently called a commonwealth or republic; and hence they who dispense the laws are also said to administer the republic of the same country.

Diversity of
governments.

Now since policy or government necessarily implies a state of superiority and subjection; for no one can properly be said to rule or bear sway, or govern, unless there be some who are ruled, or subjects of their government; so necessarily also follows a diversity of governments or policies, according to the regents or persons governing, the societies governed, and the manner of acquisition and administration of the supreme power.

Theocracy.

With respect to the first diversity of government arising from the regents, or persons exercising the supreme power, it is distributed into the following kinds. (1.) Theocracy, when people are under the immediate rule, government, and direction of God himself, in civil, as well as religious affairs; and such a state is called theocratical, as was that of the children of Israel originally under Moses, Joshua, and the Judges, till they changed it for that of monarchy, to be like other nations about them. (2.) Monarchy, when one

Monarchy.

person alone doth govern, who is therefore called a monarch, and his government is said to be monarchical. If he be a good prince, he is called king; if a bad and unjust one, he is called a tyrant, and his reign tyrannical. (3.) Aristocracy, when a few of the best

Aristocracy.

and

and chief of the people rule and govern jointly; the administration of such a republic is called aristocratical. If these men are only a few of the richer sort, and have obtained the government by force, and not right, their regency is then called, (4.) Oligarchy, and the manner in which they obtained it is called usurpation, and they themselves usurpers. (5.) Democracy, which is when the multitude doth rule; and such a state of administration is said to be democratical. Here the fathers of families assemble in council, make laws, ordain statutes, and exert all other acts of imperial power and authority.

With regard to the societies or people, in and over whom the government is exercised, there will arise policy of a fourfold denomination. (1.) Oeconomics, or that of a family. (2.) Politics, which, properly so called, is that of a city. (3.) Republic, that of a country; and, (4.) Empire, which is the highest and most extensive degree of imperial power and sway; as having not only families and cities, but nations and kingdoms, subject thereto; and the person who bears this most imperial sovereignty is called emperor; as the emperor of China, the Indies, &c.

As to the manner of acquiring and administering of government, if it be just and righteous, the government is then said to be free, and the people in a state of liberty, as having all their public affairs ordered and administered according to the rules of right and equity, which is all they can desire of governors. But if the government be obtained by force and violence, and exercised by the arbitrary will and pleasure of the ruler, without consulting or regarding the will, request, right, or good of the people; such a state is called tyranny, a state of slavery, an arbitrary and despotic government; and the people are said to be (not governed, but) tyrannized over and enslaved by arbitrary power.

By what has been hitherto defined, it appears that the civil state or government of Great-Britain is not a simple polity; that is, it is not a monarchy, aristocracy, or democracy, singly considered, but is rather a compound of them all together; for though we have one supreme ruler, whom we call our king, yet he

The parliament.

reigneth not by himself, nor is he absolute, but he governs by, and in conjunction with the great council and assembly of the nobles of the land, which we call the parliament. Nor is even this august assembly uniform or independent, for it consists of two very different parts, one of the higher nobility both temporal and spiritual, called the House of Lords; the other part is made up of the lower nobility or commonalty, the knights and burgesses of shires and borough towns, and are called the House of Commons, or the lower house.

The dependency thereof.

Now the higher house receiveth not, nor meddleth with any of the public affairs of the nation presented by bills, till those bills have first passed a hearing and examination in the lower house, and have obtained their consent. Lastly, this lower house is entirely dependent on the common people, or populace; for the members thereof are chosen by them, to act for them, as their representatives, for a short time; and if, during that parliament, they act not according to the people's request, and what they think conducive to the public good, they reject them at the next general election of members of parliament, and chuse others of whom they have a better opinion, and think will prove more faithful, wise, and worthy of the important trust.

Now since the common people chuse the members of one part of the great council of the land; and since the other part thereof, though greater in dignity, can receive no address of the people, or make any law without their consent; and, lastly, since no bill is an act of parliament, ordinance, statute, or edict of law, though both houses have consented thereto, till the king, seated on the throne of state, shall give his royal assent, and sanction it with the great seal of England; I say, considering all this, it is evident the state or polity of England is compounded of the three simple polities, monarchy, aristocracy, and democracy, and may be called a monarchico-aristocratico-democratical government; and consequently better than either of them singly or alone, as was before observed of our language.

Of the king of Great-Britain.

The monarch or king of Great-Britain, though he be not in all respects absolute, yet his dignity and power is very great and extensive. For, (1.) His supremacy

supremacy and sovereignty has the dignity and honour of whatsoever things belong to supreme magistrates; as crowns, scepters, purple robe, golden globe, and holy unction; and the crown of England has been long since declared in parliament to be an imperial crown. (2.) He acknowledges only precedence to the emperor. (3.) He owns no superiority to the bishop of Rome. (4.) He hath the supreme right of patronage through all England, called patronage paramount. (5.) The king is supreme judge, or lord chief justice of England, and the fountain whence all justice is supposed to be derived.

The king's power and prerogative are very extraordinary; for (1.) He alone, without act of parliament, hath power to declare war, make peace, leagues and treaties, send and receive ambassadors, to give commissions for levying men, arms, money, for the purposes of war and peace, &c. (2.) By his royal prerogative, of his mere will and pleasure, he can convoke, adjourn, prorogue, remove, and dissolve parliaments. (3.) He may refuse his royal assent to any bill which has passed both houses, without giving his reason. (4.) He alone hath the choice and nomination of all commanders and officers at land or sea; of all magistrates, counsellors, and officers of state; of all bishops, and other ecclesiastical dignitaries; of bestowing all honours on the higher and lower nobility of England. (5.) He hath the power of determining rewards and punishments, can pardon crimes, and remit the penalties. (6.) By his letters patent he may erect new universities, colleges, hospitals, schools, fairs, markets, forests, chaces, &c. (7.) He only gives patents or briefs to collect the charitable benevolences of the people, in case of losses, &c. (8.) No proclamation can be made but by the king. (9.) He is the guardian of idiots and lunatics, the receptacle of all estates when no heir appears, which then revert or escheat to the king. (10.) All treasure trove, (or monies, goods, &c. lost, and the owners unknown) belongs to the king. All waste ground and lands recovered from the sea; all lands of such aliens as die before naturalization; all mines of gold and silver, all royal fishes and fowls, belong to the king. (11.) He

His power and prerogative.

is deemed by the laws God's vicegerent, and therefore is supposed to have no imperfection. No non-age or minority is allowed in the king; yea, the law attributeth a kind of perpetuity, not to say immortality, to the king; for he being a corporation of himself, lives for ever; all inter-regnums being unknown in England. (12.) In the church his power and prerogative are extremely conspicuous; he alone hath the patronage of all bishopricks, and none can be chosen bishop but whom he first nominates by his *congé d'elire*; he hath power to call or convene a national or provincial synod, to preside as head, and, with the consent thereof, to make canons and constitutions; to institute ceremonies, to correct heresies, schisms, &c. and abundance of other prerogatives belonging to, and are enjoyed by the king of England, as supreme prince and priest of his people.

His title.

The title of the king of England is, By the grace of God, of Great-Britain, France, and Ireland, king, defender of the faith. The title of Most Christian King was given to Henry VIII. by the Lateran council, though used before by Henry VII. The title of Grace was given to the king about the time of Henry IV. Excellent Grace to Henry VI. High and Mighty Prince to Edward IV. Grace, and sometimes Highness, to Henry VII. To Henry VIII. first Highness, then Majesty; and now Sacred Majesty, or Most Excellent Majesty. In speaking to the king, is used Sir, or Your Majesty; and the king of England, since the time of king John, styles himself Nos, We, in the plural number, in his public instruments and letters.

The prince of Wales.

The eldest son of the king of England is born duke of Cornwall; afterwards he is created prince of Wales, a title first given by Edward V. to his eldest son. Since the union of England and Scotland, his titles are, Prince of Great-Britain, more commonly Prince of Wales, Duke of Aquitaine and Cornwall, Earl of Chester and Flint. He is reputed, in our law, as the same person with the king. The present prince is his Royal Highness George, Prince of Wales, born at St. James's, August 12, 1762.

Next

Next to the king and princes of the blood, are reckoned the great officers of the crown, whereof there are nine; as follow.

Of the great officers of the crown.

The Lord High Steward of England.

The Lord High Steward of England; he was formerly the highest officer under the king; and his power was so exorbitant, that it was thought too much to be trusted any longer in the hands of any subject. The last who had a state of inheritance in this high office was Henry of Bullingbrook, afterwards king of England; since which time they have been made only occasionally, as to officiate at coronations, arraignment of peers, &c. which when over, he openly breaks a white staff in his hand, and so his office ends.

Lord High Chancellor.

The Lord Chancellor, or Lord High Chancellor, is, at present, the highest person in the kingdom next after those of royal blood, in civil affairs; so called, because all patents, commissions, and warrants coming from the king, and perused by him, are signed, if well; or cancelled where amiss. His office is to keep the king's great seal; to moderate the rigour of common law; to judge according to equity, conscience, and reason; to bestow all ecclesiastical benefices in the king's books under 20l. per annum. He is sworn to do right to all people, to counsel the king truly, to keep secret the king's counsel, not to suffer the rights of the crown to be diminished, &c. This high office is held during the king's pleasure; the salary is above 7000l.

Lord High Treasurer.

Lord High Treasurer of England is the third great officer of the crown. It is conferred by the delivery of a staff to him by the king, and is held during the king's pleasure. His office is to have the charge and government of all the king's revenues kept in the Exchequer: he is superintendant over all the officers employed in collecting the imposts, customs, tributes, &c. belonging to the crown: he hath the gifts of all the officers of the customs in all the ports of England. He, in commission with others, lets leases of all lands belonging to the crown. His salary of late was 8000l. per annum.

The Lord President of the king's privy council is the fourth great officer; his office is to attend upon the king, to propose business at the council-table, and

Lord President.

Lord Privy-Seal.

to report to the king the transactions there. This office is held by patent, during the king's pleasure.

Lord Privy Seal is the fifth great officer, under whose hands pass all charters and grants of the king, and pardons signed before they come to the great-seal of England; with divers other matters which do not pass by the great-seal. He is of the king's privy-council. His salary is 1500*l.* per annum.

Lord Great Chamberlain of England.

The Lord Great Chamberlain of England is the sixth great officer of state, and is of great antiquity; to him belongs livery and lodging in the king's court. He presents to the king on the coronation-day all his robes, and other parts of royal attire, as also the sword, scabbard, the crown, and gold to be offered by the king, &c. On such a day he hath forty ells of crimson velvet for his own robes. To him belongs the care of providing all things in the House of Lords in the time of parliament; also the government of the whole palace of Westminster. He issues out warrants for furnishing Westminster-Hall against coronations, and trials of peers, &c. The gentleman-usher, yeoman-ushers, and door-keepers, are under his command. He disposes of the sword of state to what lord he pleases to be carried before the king, and goes himself on the right hand of the sword next the king's person, and the Lord Marshal on the left. On all solemn occasions the keys of Westminster-Hall, Court of Wards, and Court of Requests, are delivered to him. He is not to have precedence of dukes, but according to his creation.

Lord High Constable of England.

The Lord High Constable of England is the seventh great officer of the crown; whose power and jurisdiction was anciently so great, that after the death of the duke of Buckingham in 1521, it was thought too much for any subject; and therefore since that time this officer is created only on occasions of coronations, trials by combat, &c. His power and authority are the same with the Earl Marshal, with whom he sits judge in the Marshal's Court, and takes place of the Earl Marshal.

Earl Marshal of England.

The Earl Marshal of England is the eighth great officer of the crown: he is an earl by his office, whereby he takes cognizance of all matters of wars and arms, determines contracts concerning deeds of arms

out

out of the realm upon land, and of war within the realm, which cannot be determined by common law; he formerly had several courts under him, but now only the Marshalsea. This office has been long hereditary in the present house of Norfolk, the first being Earl Marshal in 1553. But the present duke of Norfolk being a papist, is incapable of the office, though he is allowed the honour, and officiates by his deputy the earl of Effingham.

The Lord High Admiral of England is the ninth and last great officer of the crown. He is entrusted with all maritime affairs, as well in respect of jurisdiction as protection. He hath the government of the king's navy, and the power of decision in all cases maritime, as well civil as criminal; and of all things done upon or beyond the seas in any part of the world, upon sea-coast, and rivers near the sea. He hath power to commissionate a vice-admiral, rear-admiral, all sea-captains, and other officers at sea. To him belong all penalties, amerciaments, goods of pirates, felons, &c. as also all stray-goods, wrecks at sea, deodands, &c. all great fishes, as sea-hogs; and all royal fishes, except the whale and sturgeon.

Lord High
Admiral of
England.

These are the great streams of government, policy, and rule, which flow from the original fountain, the king, to the common people of the realm; amongst whom it subdivides, in various ways, into lesser currents and rivulets of power and authority; by which means our commonwealth is (or at least might be) enriched and fertilized by a seasonable and uniform communication and flowing of the waters of judgment, equity, and truth.

The great courts of judicature, civil and military, are as follow.

Of the great
courts of judi-
cature.
Privy Council.

The Privy-Council; this is that august and honourable assembly, by which the king is advised and counselled; and which consults for the public good, honour, defence, safety, and benefit of the realm; not meddling with matters which may be determined by the known laws and ordinary courts of justice; but matters of complaint, and sudden emergencies. The members of this honourable council are such as the king, of his own free will and pleasure, shall chuse, and

and are generally of the highest rank, and eminent for wisdom, courage, integrity, &c. They sit at council-board, when his majesty presides; and at all debates the lowest delivers his opinion first, and the king last of all declares his judgment, and thereby determines the matter of debate.

The Parli-
ment of Eng-
land.

How assem-
bled.

The most high, grand, and honourable court, in which the most supreme and absolute power of the realm of England doth consist, is the Parliament. This high court or assembly consists of two parts or houses, called the Higher and Lower Houses of Parliament. The members thereof are of three sorts, viz. (1.) The peerage and barony, who represent the higher part of the commonwealth. (2.) The knights, esquires, and gentlemen, who represent the lower part. (3.) Bishops or prelates, who represent the clergy. Over all which the king himself presides. The parliament is assembled or summoned by virtue of the king's writs, commanding the peers and prelates to appear at such a place at such a time, and the sheriffs of the counties to summon the people to elect two knights for each county, two citizens for each city, and one or two burgesses for each borough, according to statute, charter, or custom. No man can vote for a knight of the shire who is not possessed of 40 shillings per annum freehold estate. No man can legally sit in parliament till he is of the full age of 21 years. The place of meeting is in the king's antient palace of Westminster; the Lords in one room, and the Commons in another below them. The King, Lords, and Commons, must all, or the greatest part, agree to the making of laws and repealing them. In order to this, a bill, which contains the form of the matter proposed, is presented to one of the houses, who either approve it, and send it to the other house for their approbation; or else they reject it, and so it proceeds no farther that session. When a bill has passed through both houses, with consent, a committee, or a certain number of the members of either or both houses (not less than eight) is appointed to frame the laws upon such bills as are agreed upon, which are afterwards ratified by the whole house; and whatsoever is thus approved, consented to, ratified, and sanctioned by the King, Lords, and Commons

Commons in parliament assembled, is called an act of parliament, a statute and ordinance, a rule and law of the land; and is by the subjects to be esteemed just and good, and to be obeyed.

The King's Bench in Westminster-Hall, is, next to King's Bench. the Parliament, the highest court in England at common law; in which are handled the pleas of the crown, or all things which concern the loss of life or member of any subject; as also all treason, felonies, breach of peace, oppressions, misgovernments, &c. In this court are four grave, reverend judges, whereof the first is called the Lord Chief Justice of the King's-Bench, whose power and jurisdiction of the court is very great over all England. His salary from the king is 4000l. that of the other justices 2000l. per annum each.

The High Court of Chancery, because it is designed Court of to mitigate the rigour of the other courts of judicature, Chancery. is called the Court of Equity; and is the original of all other courts. The judge of this court is but one, viz. the Lord Chancellor or Lord-Keeper of the Great Seal of England, whose sentence is definitive without a jury of twelve men. The judge hath twelve assistants, called Masters of Chancery, the first of which is Master of the Rolls, a place of great dignity. Another officer who continually attends the Lord Chancellor, is the Clerk of the Crown, an office of very high importance. Besides which there are many other offices and officers in this court; which render suits so very chargeable and tedious, that a person is little beholden to this court for more than the fine (not to say false) name that it bears.

The Court of Common Pleas is next, and is so Court of Com- called, because therein are debated the usual and com- mon Pleas. mon pleas between subject and subject, according to the strictest rules of law. None but serjeants at law may plead in this court. The chief judge is called The Lord Chief Justice of the Common Pleas; besides which, there are commonly three inferior judges. This court is held in Westminster-Hall.

The Court of Exchequer is next for the execution Court of the of the laws. In the Exchequer are held two courts, Exchequer. one of law, the other of equity, in the Exchequer Chamber. In this court may sit the Lord Treasurer, the

the Chancellor of the Exchequer, the Lord Chief Baron, three other barons of the Exchequer, and the Cursitor Baron. In this court are tried all causes relating to the king's treasury or revenue, as touching accompts, disbursements, customs, and all fines imposed on any man.

Court of Admiralty.

The Court of Admiralty is the principal or supreme of the courts held by and under the Lord High Admiral; it takes cognizance of all affairs, civil and military, on the seas, which are within the jurisdiction of the common law: therefore the proceedings in this court, in all civil matters, are according to the civil law, and run in the name of the admiral, and not of the king, as in common law. In this court he has a lieutenant called Judge of the Admiralty, who is commonly some learned doctor of the civil law.

These are the great and high tribunals, benches, or courts of judicature, established in England for the public administration of justice and equity.

Of the government of counties.

For the government of the several counties or shires in England, the king has deputed and commissioned several officers with power and authority to put in force and execute the laws upon the subject. These are,

Justices of the peace.

(1.) The justices of the peace, whose office it is to charge and keep the peace of the county, and to examine and commit to prison all who break or disturb the same, and disquiet the king's subjects. In order to this, they meet every quarter at the county-town, when a jury of twelve men, called the grand inquest of the county, is summoned to appear, who, upon oath, are to enquire into the cases of all delinquents, and to present them by bill guilty of the indictment, or not guilty; the justices commit the former to gaol for their trial at the next assizes, and acquit the innocent. This is called the quarter-sessions for the county.

Sheriffs.

(2.) Sheriffs of the county, or the high-sheriff, whose business it is to execute the king's mandates, and all writs directed to him out of the king's court, to impanel juries, to bring causes and criminals to trial, to see the sentences, both in civil and criminal affairs, executed, and to wait on and guard the itinerant judges twice a year in their circuits for the assizes. Under the sheriff are various officers, as under-sheriff, clerks, stewards

stewards of courts, bailiffs of hundreds, constables, goalers, beadles, &c. (3.) Bailiff of the hundred, a very ancient officer, but now of small authority. (4.) High constable was first ordained for the conservation of peace, and view of armour: he disperses warrants and orders of the justices of the peace to each petty constable. (5.) Coroners are two in each county, who are to enquire, by a jury of neighbours, how, and by whom, any person came by a violent death, and to enter it on record as a plea of the crown; whence they have their name crowners or coroners. (6.) The clerk of the market, whose office is to keep a standard of all weights and measures exactly agreeing with the king's standard in the Exchequer, to seal all weights and measures made exactly by the standard in his custody, and to burn such as are otherwise. He hath a court, and may keep or hold a plea therein.

Bailiff of the hundred.
High constable.

Coroners.

Clerk of the market.

The civil government of cities is a kind of small independent policy of itself; for every city hath, by charter from the king, a jurisdiction among themselves to judge in all matters civil and criminal, with this restraint only, that all civil causes may be removed from their courts to the higher courts at Westminster. To this end they are constituted with a mayor, aldermen, and burgesses, who together make the corporation of the city, and hold a court of judicature, where the mayor presides as judge. They likewise, when assembled in council, can make laws, called bye-laws, for the government of the city. And here the mayor, aldermen, and common-council, resemble the king, lords, and commons in parliament.

Government of cities.

Mayor and aldermen.

The government of incorporated boroughs is much after the same manner; in some there is a mayor; in others two bailiffs; in others the chief magistrate is called portreve, &c. All which, during their mayoralty or magistracy, are justices of the peace within their liberties, and consequently esquires. Citizens are not taxed but by the officers of their own corporation, every trade having some of their own always of the council, to see that nothing be enacted contrary to the profit of the guild or company.

Of corporations and boroughs.

For the better government of villages, the lords of the soil or manour (who formerly were called barons) have

Of villages.

have power to hold a court-baron every three weeks, where matters are enquired into and discussed relating to lands, possessions, titles, &c.

Of parishes.

And, lastly, in parishes and towns there is a very useful officer, called the Petty Constable, who is to keep the peace, in case of quarrels, to search for, and take up rioters, felons, &c. and keep them in the stocks or prison till they can be brought before some justice of the peace; in which office he is assisted by the tithing-men. Thus every city, village, and town, hath almost an epitome of monarchial government, of civil and ecclesiastical polity in itself, which, if duly maintained, would render us a happy people; and "judgment would run down our streets as a river, and righteousness like a mighty stream."

Degrees of nobility.

It now remains that I only speak a word or two of the degrees of nobility in England, and titles of honour. The degrees of peerage, or higher nobility of England, are five, viz. Duke, Marquis, Earl, Viscount, and Baron.

A Duke.

A Duke is, at present, created by patent; his mantle is guarded with four guards; his title is Grace; his coronet hath only leaves without pearls. Out of the king's presence he may wear a cloth of state hanging within half a yard of the ground; so may his dutches, and her train borne up by a baroness. No earl is to wash in the presence of a duke without his permission.

Marquis.

A Marquis is created by patent; his mantle is double ermine, three doublings and an half; his title is Most Noble; his coronet hath pearls and strawberry leaves interchangeably set around of equal height. His cloth of state may reach within a yard of the ground, which he must not wear in the presence of the king or a duke. His marchioness hath her train borne by a knight's wife out of the presence of her superiors. No viscount is to wash with a marquis but at his pleasure.

Earl;

An Earl is created by patent; his mantle hath three doublings of ermine; his title is Right Honourable; his coronet hath pearls raised upon points, and leaves low between. He may have a cloth of state without pendants, but only fringe. His countess may have her train borne by an esquire's wife out of the presence of her superiors, else by a gentleman.

A Viscount

A Viscount was first created in England in the 18th of Henry VI. in the person of John Beaumont. He is made by patent; his title is Right Honourable; his mantle hath two doublings and a half of plain white fur; his coronet hath only pearls set close to the chaplet. He may have a cover of essay held under his cup when he drinks. His viscountess may have her gown borne up by a woman in presence of her inferiors, but else by a man.

A Baron is made sometimes by writ, but usually by patent; his title is Right Honourable; he hath two doublings on his mantle, and six pearls on his coronet upon the circle. He may have the cover of his cup held underneath while he drinks; and a baroness may have her gown borne up by a man in the presence of a viscountess.

Besides the common titles here mentioned, each of those degrees have more illustrious titles, as follow: Their high titles.

A DUKE, Most High Puissant and Noble Prince.

A MARQUIS, Most Noble and Puissant Prince.

An EARL, Most Noble and Puissant Lord.

A VISCOUNT, Most Noble, Potent and Honourable.

A BARON, Most Noble and Right Honourable.

The title Lord is common to all these degrees.

We come now to the lower nobility, who are called the Commons of England, and consist of three degrees, of England. Baronets, Knights, and Esquires.

A Baronet is next in honour to a baron, and is the lowest degree of honour that is hereditary; they and their eldest sons, at full age, may claim knighthood. He has precedence of all knights, except those of the garter, bannerets, and those who are privy-counsellors. They take place of each other according to the date of their patent. The title is Sir, and their wives are Ladies.

A Knight is, according to his original, a military man, a soldier, or man of war; but now the honour of knighthood is conferred for some personal merit or desert, and therefore dies with the person, and descends not to his sons. There are many orders of knighthood, but in England the chief and most honourable is that of the order of St. George, called Knights of the

the Garter ; next to which are the Knights Bannerets, of which there are now none in England. Knights of the Bath are next in honour ; and then Knights Batchelors, which degree is now given to gown-men, as lawyers and phyficians ; and fometimes to artists, as it was to that excellent mathematician Sir Ifaac Newton.

Esquires.

Esquires make the next degree of the lower nobility, fo called from the French word Efcuiers, fhield-bearers, becaufe they were wont to bear before the prince, &c. in war, a fhield, lance, or other weapon ; and therefore they are called in Latin Armigeri, i. e. bearers of arms. Of this title are, (1.) All the eldeft fons of vifcounts and barons, alfo all their younger fons. (2.) All the fons of earls, marquiffes, and dukes ; and no more by the common law. (3.) Esquires of the king's body, among the officers at court. (4.) Esquires created by the king, by putting about their neck a collar of SS's, and giving them a pair of filver furs. (5.) Divers in fuperior office for king or ftate, as ferjeants of royal offices, juftices of peace, mayors, counfellors at law, batchelors of divinity, law or phyfic, are all reputed Esquires, or of equal degree, though none of them really are fo.

The Gentry of England.

The Gentry of England are the loweft degree among the lower nobility : thefe are the descendants of antient families who have been always free, and never owed obedience to any man but their prince, and who have always borne a coat of arms ; fo that properly none are gentlemen but fuch as are born fo. But in England the king being the fountain of all honour, he can make a gentleman by charter, or by beftowing on him fome honourable employment. Merchandize or trade does not deftroy gentility.



OF JURISPRUDENCE.

JURISPRUDENCE is, according to its etymology, the knowledge of what is just and right; being derived of the two Latin words, Jus, right; and Prudentia, skill, or knowledge. It is therefore by some defined, the art of right and wrong, justice and injustice. By others, the knowledge of the laws, rights, customs, statutes, &c. necessary for the doing of justice.

Jurisprudence defined.

Its etymology.

Right (jus) differs from law (lex) (1.) As it is a genus or general kind, law a species only. (2.) Again, right has respect to the nature of things, as well unwritten as written, but law has respect only to the written rules and precepts of right and justice. Right and equity also differ. Right is the whole of what is required, or may be claimed; equity is that which abates so much of strict right, as reason, goodness, and circumstantial exigencies seem to demand.

Right, how it differs from law and equity.

Right is the rule of justice, which is the virtue of giving to every one his due. Justice, as it is concerned in commerce or government, is respectively distinguished into commutative and distributive. Commutative justice wholly regards the prices and value of things, and observes only the simple or arithmetical proportion of commutation. But distributive justice, as exercised in governing, is that which appoints rewards and punishments, and regards the proportion called geometrical; that is, as the heinousness of one crime is to the heinousness of any other, so is the degree of punishment assigned for the former to that degree thereof which is (or should be) assigned for the latter. But where can we find this proportion of justice observed in our English dispensation, where the same punishment is decreed for theft and murder, for murder simply, or any how compounded? Acts, certainly, widely differing in the degree of their criminal nature!

Justice, what. Is twofold, commutative and distributive.

Kinds of law.

Law, as it consists of the written dictates of right reason, or the rules and precepts fit for the due ordering and government of human society, is generally distinguished into the following three general kinds. (1.) The law of nature. (2.) The law of nations; and (3.) The civil (usually called the common) law. These are the grand rules of action, of which in their order.

The law of nature.

The law of nature is that universal principle implanted in the original constitution of all sensible beings, whereby they are directed to perform all those acts which are agreeable to their respective particular natures, and tend to their well-being in general. This principle is, in mankind, called natural reason; but in brutes and other animals it is called natural instinct. From hence result all natural affections, and the acts of procreation, education, conservation, and defence of life, in ourselves and our young. By this natural right, every animal, however despicable it may appear to us, has an equal claim to live, and enjoy its being unhurt, during the natural period of its life. And therefore it does not only shew an inconsiderate, cruel and savage temper in men, when they causelessly put poor creatures to pain, misery, or death, or for the sake of diversion or curiosity; but it is a manifest breach and violation of the natural laws of right and life; which those animals enjoy, and are to be preserved and defended by, equally with their human (or rather inhuman) tormentors.

The law of nations.

The law of nations is the second great rule of acting well and justly. This consists in whatsoever is done, or approved and appointed to be done by the wisdom and judgment of any nation, body of people, or society, for the due government and conservation thereof; and is always proportionate to the exigencies of human necessities.

For experience, use, and necessity, find many things expedient to the happiness of living in society, beyond what the mere law of nature prescribes; and therefore provision must be made for adjusting and settling all such cases and points as they emerge, by general acts and laws suitable to the nature and genius of the commonwealth or society.

This

This universal law of nations, as it respects the general behaviour and manners of rational and social beings, is twofold, viz. (1.) Primary, and which results from pure reason and ratiocination, and is founded in every nature of the human species. Of this kind are all acts of religion and piety towards God, our Creator; patriotism, or love and zeal to promote the welfare and happiness of our country; and all acts of obedience to parents and magistrates in children and subjects. (2.) Secondary; which arises from use and necessity, and is constituted by the common consent of nations, for their mutual subsistence and continuation. According to this, nations at first were distinguished; dominion and government founded; wars decreed; treaties made; and laws of contracts, obligations, servitude, manumission, &c. were found necessary. By this law, lands and countries are divided and bounded, societies instituted, vicinage of dwelling and building together, by which means we come to have cities, boroughs, and villages.

The civil law (the professors of which are called civilians) is the third general rule of justice and human procedure. This is what every people ordains and constitutes for itself, or which is peculiar and proper to every city; according to the Justinian definition. So the law used by the city and people of Rome was called the Roman civil law; thus the common law of England, and the peculiar laws of cities and boroughs, (which are called municipal laws) make the body of the English civil law.

From the foregoing account of the three general kinds of law, it seems pretty natural to make the comparison between the nature of law and a tree. In a common tree we consider the roots, trunk or body, and the limbs or branches. So in the legal tree, the root is the law of nature diffusely spread through all the soil of animal kind; the trunk or body is the law of nations, which immediately springs from the radical law of nature, and is but one and the same to nearly all mankind. The limbs or branchery of the legal tree is the civil law vastly extended, diversified, and branched out into the common laws of every separate country, and the municipal laws of cities and corporations.

The Roman
civil law.

When the civil law is mentioned absolutely, or without saying of what city or country; it is usual to understand thereby the civil law of the Romans, which is so called by way of excellency: a short account of the original and progressive perfection of which may not be unacceptable, perhaps, and here follows.

A short history of it.

About A. M. 3152, Lycurgus instituted excellent laws for the Lacedemonians or Spartans in Laconia; and afterwards, A. M. 3460, Solon did the same at Athens; by which means Greece became famous for its laws; and therefore the Romans, (remarkable for their care of the legislature) about A. U. 300, sent three legates to Athens, and other cities of Greece, to transcribe and bring home the best of their laws, for their own use. After three years they returned, and seven other learned men being appointed to join them, (from their number called the Decemviri) they were invested with power to regulate the business of new-modelling the laws. Whereupon they reduced and digested them into ten tables, and then exposed them to public view, with liberty for any persons to make exceptions. Upon the approbation of the citizens, a decree passed for the ratification of the new laws. Some little time after the Decemviri (or ten men) saw occasion to add two more tables of laws to the former ten; and from these twelve tables, as the source and fountain of right, issued all the streams of public and private law and equity, by which the commonwealth was regulated and governed.

The Roman
by-laws.

The Romans had also certain by-laws, besides the twelve tables; as (1.) The Plebiscita, which were laws made by the commons, without the authority of the senate. (2.) The *Senatusconsulta*, which were ordinances made by the sole authority of the senate. (3.) The *Jus Honorarium*, which consisted of the edicts of the prætors, or some chief magistrate. And (4.) The *Principalis Constitutio*, or principal ordinance, which was enacted by the prince or emperor, at the time when the government was in the hands of a single person.

The laws of
twelve tables.

The laws of the twelve tables were divided into three parts. (1.) The first related to the concerns of religion. (2.) The second sort to the right of the public.

public. (3.) And the last to the right of private persons.

These laws being established, disputations and controversies in the courts became unavoidable, since the interpretation of those laws was to be founded on the authority of the learned. And this body of interpretation they especially called the *Jus Civile*, or civil law. Besides, out of all these laws the learned composed a scheme of forms and cases, by which the processes in courts were directed. These were termed *Actiones Legis*, or actions or cases at law.

The Roman laws daily increasing, they at length arose to such an exorbitant bulk, that in the time of Justinian there were two thousand distinct volumes on this subject. They being therefore thus tedious, and almost useless, he formed a design of reducing them to a more reasonable number and quantity. Accordingly he set his chancellor Tribonian about the work, A.D. 528, which was happily compleated in the compiling the four volumes or tomes of the civil law now extant, and which have so much contributed to the regulation of all the states in Christendom. These are the Digest or Pandects, the Code, the Institutes, and the Authentics or Novellæ, of which a little in order.

Reduction of the Roman laws into four volumes.

The Digest is the first volume of the civil law, and was thus named, because its author (Tribonian) hath put or digested all things together, every book and title in its natural place and order. This tome has also the name of Pandects, as being a collection of all that was material in one hundred and fifty thousand verses of the old books of the law. This Digest was compiled from the works of twenty-seven venerable and eminent old lawyers, who lived before and after Christ, even to the time of Maximinus. The tome is divided into seven parts, and they again into fifty books.

The Digest or Pandects.

The Code makes the second volume of the civil law. It contains twelve books; was compiled from the answers and determinations of fifty-six emperors and their councils, (many whereof were learned and skilful lawyers) especially from the time of Adrian to Justinian himself. It was intended to supply the defects, and illustrate such matters as were handled too briefly, obscurely, or omitted in the Digest; and

Of the Justinian Code.

The Theodosian Code.

therefore contains things of more benefit and use to mankind in general, though its stile is not so pure, nor its method so accurate as that of the Digest, which contains matters of much more polite, subtle, and witty argument. Besides the Justinian Code, there is another called the Theodosian Code, from the emperor Theodosius, who caused it to be made; it is of good use, for (as it is said) there is no understanding the former without its help.

Of the Institutes.

The Institutes, or imperial institutions, make (according to some) the third volume of the civil law. It is a compendium of the Digest drawn into four books, and each book into a certain number of titles; these were appointed by the emperor to be composed on purpose for the use of young students, that so having the first elements of the whole profession in this small volume, they might the sooner gain a competent knowledge of it, without being discouraged by the largeness of the other volumes. These Institutes ought to make a part of every gentleman's (I had almost said every man's) study.

The Authentics.

The Authentics make the fourth and last volume of the civil law. They are so called, as having the authority of the emperor Justinian's own mouth, being a body of new constitutions set out by him after the Code. The volume is divided into nine collations (in the Latin edition) and these again are subdivided into 168 Novellæ, novels, or new constitutions, each of which consists of several chapters.

The civil law how received by other nations.

These four volumes contain the Jus scriptum, or written civil law, which, where custom fails, is the grand standard and directory of all the states, kingdoms, and empires of Europe; yet is not received by any one nation without some addition or alteration. For sometimes the feudal law is mixed with it; or general or particular customs; and often ordinances and statutes cut off a great part of it.

Thus, in Turkey the Justinian Greek Code is only used. In Italy the canon law and customs exclude a good part of it. In Venice custom has almost an absolute government. In the Milanese, the feudal law, and particular customs, bear sway. In Naples and Sicily the constitutions and laws of the Lombards are said

said to prevail. In Germany and Holland the civil law is esteemed to be the municipal law; but yet many parts of it are there grown obsolete, and others altered by canon law, or different usage. In Friezland it is observed with more strictness. But in the northern parts, the *Jus Saxonicum*, *Lubicense*, or *Culmenfe*, is preferred before it. In Sweden and Denmark it has scarce any authority at all. In France only a part is received, and that in some places as a customary law; and in those provinces nearest Italy, the municipal written law. In criminal causes the civil law is more regarded in France, but the manner of trial is regulated by ordinances and edicts. In Spain and Portugal the civil law is corrected by the *Jus Regium*, and custom. In Scotland the statutes of the Sederunt, part of the *Regiæ Majestatis*, and the customs, controul the civil law; which else is the common law of this country. And, lastly, in England, besides the civil law, we have divers others; as the canon law, common law, statute law, by-laws, forest law, and martial law; of all which more by and by.

We cannot conclude this historical account of the civil law without taking notice of the Feudal Law, or Feuds, which is a book of customs and services, which subjects or vassals do to their prince or lord for the lands, tenures, or fees, that they hold of him; the grant of which is called the feud, and he to whom it is granted the feudatory.

This book of Feuds is now made the fourth volume of the civil law, the *Institutes* being reckoned as an additional part of the *Digest*, or first volume. This part was not of much use in the old emperors time; some refer the original thereof to Constantine the Great. The collectors or compilers of this volume were *Obertus de Horto*, and *Giraldus Compagitus*, senators of Milan, who drew it partly from the civil law, and partly from the antient customs of Milan, but without any good form or order. The learned in this part of the civil law are called feudists.

Having thus dispatched a concise history of the civil law, I come now to say something of the subject about which it is conversant, and that is threefold, viz. (1.) The right of persons. (2.) The right of things. And (3.) The right of actions. For all kind of right

The subject of the civil law.

Right of persons, things, and actions.

Divisions of
persons.

Sex.

Age.

Infants.

Adolescents.

Minors.

Youths.

Manhood.

Seniors.

Health.

Compos men-
tis.

Sanus corpore

Mente captus.

Invalid.

Diseased.

Liberty.

Liberi.

Servi.

Ingenui.

Liberti.

Relation.

Power.

Division of
things.

(which is the immediate object of the civil law) respect one or other of these three things, viz. persons, things, or actions. Of which a little in order.

With regard to persons, the law makes several divisions, as (1.) In respect of sex, they are distinguished into men and women. (2.) In regard of age, they are said to be infants till the seventh year; from thence to twelve in women, and fourteen in men, they are called adolescents; and all under these years are generally stiled minors. Again, from thence to twenty-five they are reckoned youths; from twenty-five to thirty-five they are said to be in a state of manhood. After this they begin to be numbered among the seniors or elders, and at sixty are old men and women. (3.)

With respect to their state of health, a man is said to be compos mentis when he appears to have understanding and judgment; sanus corpore, sound in body, when all the members are sound and whole; or else he is said to be mente captus, disordered in mind: an invalid, when maimed or manacled in his members; and diseased, when labouring under any sickness or weakness of body, &c. (4.) Again, with regard to liberty, they are distributed into Liberi or freemen, and Servi or bond-men, or servants. The freemen were again of two sorts, viz. Ingenui, such as were born free; or Liberti, such as were made free by manumission. (5.) With respect to relation, the law considers that of husband and wife, parents and children, brothers and sisters, with all other degrees thereof, whether in a direct line, by blood, called consanguinity; or by matrimonial alliance, called affinity. (6.)

With regard to power, persons are distinguished into princes or rulers, and subjects, masters and servants; with various other discriminations on various accounts not to be here enumerated.

Now, according to all these, and other indifferent capacities and relations of men, the civil law has made provision that every man in his proper circumstances shall freely enjoy his right, or every thing that may be esteemed or adjudged to be due to his character, station, or quality of life; and this is called the right of persons.

Things are the next object of right; the Justinian division of things is threefold. (1.) Some things are in

in our patrimony or inheritance, and some are not. (2.) Some are common, some public, some belong universally to all, some to no person, and some to particular persons. (3.) Some things are said to be corporeal, and others incorporeal. Of these a little in order, according to the several titles.

Things which are of or belonging to our patrimony, are those which we properly call our goods, moveable or immoveable; the subject of commerce; and are said to be of human right, and which we have liberty to use according to our wills and necessities. Those things which are not appertaining to patrimony, are things sacred, religious, and of divine right. Those of pa-
trimony.

Things which by natural right are common, or the common property of all men, are all such as are equally useful and necessary to all men; as the air, the sea, sea-shores, running waters, &c. also birds which fly in the open air, fishes in the main ocean, &c. Things com-
mon.

Things public are such whose property appertains to a certain people, and their uses common to all. Under this head therefore are rivers and ports in general; and therefore the right of fishing used to be free to all; as also the use of the banks is public as the rivers themselves, by the law of nations. However it might be in Justinian's time, it is certain that now the right of rivers, ports, and fishing, is very much restrained from public or free use, by particular jurisdiction. Things public

Things are said to be universal, and to belong to all which are in cities, as theatres, markets, courts, public walks, and all other things proper to cities, and subservient to the uses of private persons according to the municipal laws thereof. Things uni-
versal.

Things which are properly belonging to no man, are all such as are not the subject of commerce, nor can be said to be the goods of any one, either in regard of necessity or use. As, among natural things, wild beasts, birds, fishes, and men; and all things of divine right, as churches, sacred utensils, religious services by divine institution, and all holy things. Things per-
taining to
none.

Lastly, things which are the property or the goods of particular men, are all such as are by private patrimony, or which any particular man may acquire the possession of, by any invention or commerce, agreeable to Things of pri-
vate property.

Acquired by
occupation.

Accession.

Specification.

Tradition.

to the law of nations. Now the dominion or possession of things is obtained in four several ways; as (1.) By occupation, which is by apprehending and taking those things which before did properly belong to none; as fishing, fowling, hunting, &c. by the law of nations. (2.) Accession, which is when any thing in our own possession produces an increase, as of animals by birth, vegetables by plantation, and riches accruing by trade and industry. (3.) Specification, as it is called; which is the making or constituting a new species of things from materials before in my property; as making bricks of clay, and houses of them; making cloth of flax and wool, and garments thereof, &c. (4.) Tradition, by transferring or making over the right and property of things from one man to another, as in buying and selling, by donation or gift, or any other legal way.

But I cannot think this a very critical enumeration of the several ways of making an acquisition or possession of the right and property of things.

The third division of things was into corporeal and incorporeal.

Things cor-
poreal.

Corporeal things are said to be all such as are tangible, or that may be touched, or that fall under the external sense; as raiment, money, land, man, and all other things moveable and immoveable.

Incorporeal.

Incorporeal things are such as can neither be seen nor touched, but are objects only of intellectual perception; as rights and privileges, services, obligation, and uses of things: concerning all which civilians discourse very largely under various titles and questions relating to each; and every case of things corporeal and incorporeal is discussed, explained, and stated according to the tenor of civil right; and this is called the right of things.

The right of
actions.

Action, what.

The right of actions is the third object of civil law. Action, as civilians define it, is nothing but the right of proceeding in judgment to obtain what is due; that is, it is a power or faculty of acting in such ways, that a person, in courts of judicature, may ask or demand of the judge that which ought to be given or restored to him: and this form or process

of

of obtaining, or defending one's right at law, is called the pleading a cause; and the whole affair is called an action, cause, prosecution, or suit at law, indifferently.

Actions receive a large division among lawyers, the principal kinds of which are these: (1.) Personal actions; these are all such whereby a man claims debts, or other goods and chattels, or damages for them; or for wrong done to his person. (2.) Actions real; these are all such as concern the right of things; as when the plaintiff claims title to lands, tenements, rents, or commons in fee-simple, fee-tail, or for term of life. (3.) Actions civil; these are all such as proceed from legitimate and civil causes, as when a man sues for his due by covenant, contract, &c. as money lent, &c. (4.) Mixed action, viz. that which is partly personal, and partly real, or wherein the right of persons and things are both concerned; as when a suit is given by law to recover the thing demanded, and damages for the wrong sustained. (5.) Action penal is such an one as aims at some penalty or punishment in the person sued, either corporeal or pecuniary. (6.) Action popular is that which is upon the breach of some penal statute, which any man that will may sue for himself and the king. (7.) Action of a writ is when the defendant pleads some matter, by which he shews the plaintiff had no cause to have the writ which he brought. (8.) Action upon the case is a writ brought against any one for an offence done without force, and by law not specially provided for. (9.) Action upon the statute is an action brought against a man upon an offence against a statute, whereby a penalty is laid for so doing. (10.) Action auncstral, that which we have by some right descending from our ancestors.

The kinds of action:
Personal.

Real.

Civil.

Mixed.

Penal.

Popular.

Of a writ.

Upon the case.

Upon the statute.

Auncstral.

They who would see these subjects treated of at large, may consult the works of civilians, and especially those who have wrote upon the Imperial Institutions; as Antonius Perezius, and Cowel's Institutes of the Laws of England. I shall now proceed to specify the several kinds of laws now in use in England, and the

Of the laws of England.

the methods of proceeding in courts of judicature thereby. These laws are,

The Civil Law

The Civil Law, of which we have spoken enough already. Use is made of this law in all ecclesiastical courts, courts of Admiralty, and court of the Earl-Marshal. Also this law is made use of in treaties with foreign potentates. And, lastly, both the universities serve themselves of the civil law; for, by their privileges, no student is to be sued at common law, but in the Vice-Chancellor's court, for debts, accounts, injuries, &c.

The Common Law.

The Common Law; this is a compendium of the best and most antient Saxon laws first made by Ethelbert, the first Christian king of England. These laws king Alfred afterwards reduced into one body, codex, or volume of laws; and being made to extend equally to the whole nation, it was very properly called, in the Saxon tongue, The People's Right, i.e. the common law: and this Codex was probably the same with the Dom-bec, or Dome-Book, whereby, in all subsequent reigns of the Saxon race, they administered justice and determined causes. These laws were not so much observed by Harold I. and Hardicanute, as being usurpers of the Danish race. Edward the Confessor, being of the Saxon race, restored those laws, and out of all then extant made a collection of the best, and ordered them to be observed, as Alfred had done before him. This body of folc-right, or common law, was not so much altered by the Normans in substance as in the names of things; for even William the Conqueror published them as the laws of Edward the Confessor, confirmed and proclaimed them to be the laws of England, and took an oath to keep them inviolable. In the reign of Henry I. the old written laws were revised, and others added to them, which together made a summary of all the rights and privileges of the people of England, and was called the Magna Charta, or great charter of English rights. This was afterwards confirmed by king John, and again confirmed and augmented by Henry III. and other kings after him. Such is the original, and from thence is derived the body of the common law now in use.

Magna Charta

Statute Law is that which consists of statutes, Of the Statute
acts, and ordinances of king and parliament; the Law.
manner of making which has been already related.
This law provides for all cases wherein the common
law is silent: and this is most properly called the
English law, as being made at the desire and request
of English people.

Canon Law. The canons of many ancient general Of the Canon
councils, of many national and provincial synods, Law.
besides divers decrees of the bishop of Rome, and
the judgments of antient fathers, had been received
by the Church of England, and incorporated into
one body of common law; by which she always
proceeded in the exercise of her jurisdiction, and
doth still by virtue of the statute 25 Hen. VIII. so
far as the said canons and constitutions are not repug-
nant to the Holy Scriptures, the king's prerogative,
or the laws, statutes, and customs of the realm.
But this has come under some regulations of late by
statute-law.

Martial Law; this depends upon the king's will Of the Mar-
and pleasure, or his lieutenant's, in time of actual tial Law.
war; for on account of sudden dangers, and casual
emergencies of war, the king useth an absolute
power, inasmuch as his word goes for a law. This
sort of law extends only to soldiers and mariners,
hath being only in time of war, and then and
there only where the king's army is on foot. This
law is likewise very much regulated by statute-
law.

Forest Law; this consists of laws relating to Of Forest Law
forests, which are peculiar and different from the
Common Law. The Forest Laws are particularly
expressed in the Charta de Foresta, or Charter of the
Forest. All offences committed in forests and the
parks of noblemen are punished with severity; and
deer-stealing is now made felony, and punishable with
death.

Law of Custom. In divers parts of England there Of Custom.
are some peculiar customs which have the force of
common law among the people to whom they belong;
as Burrough-English, a custom peculiar to England, Burrough-
whereby English.

Gavel-kind.

whereby the younger son, or, in want thereof, the younger brother is to inherit. Also Gavel-kind is a custom peculiar to the people of Kent; the privileges of which are threefold: (1.) The male heirs share all the lands alike. (2.) The heir, at fifteen, is at full age to sell or alienate. (3.) Though the father be convicted of treason, yet the son enjoys the inheritance: hence the proverb, The father to the bough, and the son to the plough. These privileges they received by grant from William the Conqueror.

By-laws.

Moreover, by the king's royal charter, granted to divers cities in England, the magistrates have a power to make such laws as may be beneficial for the citizens, and not repugnant to the laws of the land; and these are binding only to the inhabitants of the place, unless they are for general good, or against a general inconvenience, for then they bind strangers also.

The manner of procedure in courts of judicature.

The manner of procedure in all suits, causes, or trials of common and statute law, is as follows:

Grand inquest or jury.
Of persons indicted.

The sheriff summons twenty-four men, either gentlemen or the better sort of yeomen, chosen indifferently out of the county: these, at the opening of every quarter-sessions, are sworn to enquire into the nature of the facts contained in all the bills of indictment preferred to the court: if they find the bill to be true, they write on it *Billa vera*, and the person therein named is indicted; but if they do not find it true, they write on the back side *Ignoramus*: and this is called the grand inquest or jury.

Outlawry, what.

The person indicted at the quarter-sessions is sought after, taken, and sent to prison, if he can be found, that he may be convicted or cleared of the matter of which he is indicted at the next assizes held for that county. If the sheriff cannot find him, process is made out against him to surrender himself prisoner, or else to be outlawed. So he is called upon three several session-days running to render himself up to the law; the fourth is called the exigent, when, upon his non-appearance, he is outlawed. And this outlawry consists in his being divested of the benefit and protection of the laws of the

the land, excluded from the number of the king's subjects, and the confiscation of all his goods to the king.

At the ensuing assizes the persons indicted are brought to their arraignment in the court at the bar before the judge: if no man appear to prosecute the indicted person, he is acquitted directly; if prosecutors appear, they have witnesses to attest and declare the matter against the prisoner. The sheriff hath impannelled in readiness an inquest of twelve men, called the petty jury; these are placed near the prisoner to hear and attend the charge, the pleadings of the lawyers on both sides, and the defence which the prisoner can make: they also ask what questions they please of the witnesses; and when all the witnesses are examined, and the pleadings are all over, one of the judges briefly recapitulates all that has passed, putting the jury in mind of what has been alleged and defended on either side, and informing them what points are according to law, and what not: after which the jury are bid to retire by themselves, an officer being charged with them to see that they have neither meat, drink, fire, nor candle, that they may sooner conclude their opinions, which must be unanimous. When they are agreed, they come back into court, and desiring their foreman (i. e. the first upon the list) may speak for them, he declares, in few words, the opinion of all the jury, they being all of one mind, or else to be remanded back to their confinement till they can agree. Their verdict in criminal causes is, Guilty, or, Not guilty; and in civil actions the form is, Finding the bill for the plaintiff or defendant.

When a person is indicted and found guilty of a capital crime, the judge proceedeth to give sentence according to this form, viz. Thou N. M. hast been indicted of such a felony, &c. and therefore arraigned; thou hast pleaded Not guilty, and put thyself upon God and thy country; they have found thee guilty; thou hast nothing to say for thyself; the law is, Thou shalt return to the place from whence thou camest; from thence thou shalt be carried to the place of

Of trials of
assizes.

The manner
of pronoun-
cing sentence.

of execution, where thou shalt be hanged by the neck till thou art dead. Then he saith to the sheriff, Sheriff, do execution.

Of capital crimes.

High-treason.

Petty treason.

Felony.

The punishment of traitors.

For petty treason.

Beheading for a peer.

All crimes in England that are capital, or touch the life of a man, are of three kinds, viz. (1.) High-treason, which comprehends all attempts against the security, safety, and peace of the king, or any of the royal family; as also against the government and constitution; also clipping, or coining false money, counterfeiting the king's privy-seal, &c. (2.) Petty-treason; this is when a man kills his master, a wife her husband, a secular his prelate, to whom he owes faith and obedience. (3.) Felony; this comprehends murder, larceny, or theft, sodomy, buggery, rapes, firing houses, &c.

The punishment of high-treason is by law thus appointed: the traitor shall be drawn on a sledge to the gallows, there hanged by the neck, presently cut down alive, his bowels instantly taken out of his belly, and burnt before his face; then his head shall be cut off, his body divided into four parts, and the whole hung up or impaled where the king shall command. Besides all this, his lands and goods are forfeited, his wife loseth her dowry, and his children their nobility, and all right of inheritance from him or any other ancestor.

For petty-treason the punishment is to be drawn on a sledge and hanged, for a man; but for a woman, to be drawn and burnt alive, though it be usual to strangle them first at the stake. All felonies are punished with hanging only, as before said. But the king has the prerogative of shewing mercy to felons, in reprieving them from death, either for pardon, transportation, &c.

If a peer of the realm doth commit high-treason, petty-treason, or felony, although his judgment be the same with that which is customary in the cases of common persons; yet the king doth usually extend so much favour to such, as to cause them only to be beheaded with an ax on a block lying on the ground, and not, as in other countries, by a sword, kneeling or standing.

If

If a criminal indicted of any capital crime refuses to plead, or put himself upon a legal trial, then, as mute and contumacious, he is presently to suffer the horrid punishment called Peine forte & dure, or pressing to death, by extending him on his back, naked on a floor, and laying on his body iron or stone, as much or more than he can bear. The next day he is to have three morsels of barley bread without drink; and the third day he is to have water next the prison-door (except running water) without bread; and this shall be his diet till he die. But the English naturally abhorring cruelty, generally charge the criminal with so much weight at once, as causes him to expire presently.

The punishment of a mute person. Peine forte & dure.

Thus much for the laws of England, which are undoubtedly the best in the world for the mercy and equity, as well as the justice, of them; one thing only is to be wished, that the benefit of them might be had with less difficulty, and that the marks of a corrupt commonwealth were less visible in their bulk and multiplicity.

OF HERALDRY.

Heraldry defined.

HERALDRY is the art of blazoning or displaying coats of arms in proper colours and metals; and is therefore also called Armoury; and persons well skilled therein, heralds or armourists. This art consists of two great parts, viz. Blazon and Marshalling.

Blazon.

Blazon is the explication of coat-armour in such apt and significant terms, that the virtues and merits of the first bearers may thereby be known; and this is done by expressing what the colours, figures, postures, positions, &c. of things borne in the coat-armour do import; for they are all of them symbolical representations or ensigns of the virtues and qualities of the persons to whom they were granted.

Marshalling.

Marshalling is the orderly disposition of several coats, belonging originally to divers families, within one shield or escutcheon, together with all the armorial ensigns, ornaments, and decorations belonging thereto, in their proper places without the escutcheon.

The Shield or Escutcheon.

The Shield or Escutcheon, called by the antients Scutum, is the principal thing whereon figures, as emblems, are now painted by all nations. As to its shape and position, there being no established rule concerning them, they are never mentioned in blazoning.

The Field.

The Field is the whole surface or space within the bounding lines of every shield or escutcheon, and retains such honourable marks as antiently were acquired in the field of battle, being of the tinctures and metals received in the science of Heraldry; and are called

Arms, what.

Arms, which are all those figures and characters with which the field of the escutcheon is charged, and are expressive of the degree, merit and quality of the original bearers. These are taken from all parts of

of the creation; as angels, men, beasts, fowls, fishes, insects, celestial bodies, trees, herbs, and all artificial subjects. The several parts, postures, positions, and tinctures of which, are also to be regarded, as being very significant in coat-armoury.

The Points or Parts of an Escutcheon are nine, The Points of an Escutcheon.
viz. (1.) Three on the upper part, in an horizontal direction; of which the middle point is called the Chief; that on the right corner, the Dexter Chief; and the other in the left corner, the Sinister Chief.

(2.) Three points perpendicularly situated in the middle part of the shield; of which the first is called the Collar or Honour Point; the second, the Heart or Fess Point, as being exactly the middle point of the field; the third is called the Nombriol or Navel Point.

(3.) Three points horizontally at the bottom of the shield; of which the middle one is called the Base Point; the other two the Dexter and Sinister Base Points. Now the charges are of different importance, as they are placed differently in these points of the shield; and therefore their situation, as to the points, ought to be carefully mentioned in blazoning a coat of arms, unless in a few special cases.

Tinctures are next to be considered in armoury; Of Tinctures.
they are those armorial colours with which the ensigns and charges of coat-armour are painted. Those used in Heraldry are of three sorts, viz. (1.) Metals, Metals, as Or, gold; and Argent, silver. (2.) Colours, as Colours, Azure, Gules, Sable, Vert, Purpure, Tenne, and Sanguin. (3.) Furs, the principal of which are two, Furs, viz. Ermine and Vair; besides which there are several others, as Ermines, Erminoise, Erminites, Pean, Contre-Vair, Potent, Varry, &c.

In blazoning, these colours are differently termed according as the bearers are private gentlemen, nobles, or princes; for they are called Tinctures in the arms of gentlemen; precious Stones in those of noblemen; and Planets in those of emperors, kings, and sovereign princes. The particular names of which, in each case, are seen in the following table.

Of Tinctures.

Metals, Metals, Colours, Colours, Furs.

Metals, Metals, Colours, Colours, Furs.

Metals, Metals, Colours, Colours, Furs.

Metals, Metals, Colours, Colours, Furs.

Metals, Metals, Colours, Colours, Furs.

Metals, Metals, Colours, Colours, Furs.

Metals, Metals, Colours, Colours, Furs.

Metals, Metals, Colours, Colours, Furs.

The different blazon of them for different degrees of men.

Colours.	Gentlemen.	Noblemen.	Sovereigns.	
	Tinctures.	Precious Stones.	Planets.	
Yellow.	Or.	Topaz.	Sol	☉
White.	Argent.	Pearl.	Luna	☾
Black.	Sable.	Diamond.	Saturn	♄
Red.	Gules.	Ruby.	Mars	♂
Blue.	Azure.	Sapphire.	Jupiter	♃
Green.	Vert.	Emerald.	Venus	♀
Purple.	Purpure.	Amethyst.	Mercury	☿
Orange Colour.	Tenne.	Jacynth.	Dragon's Head	♁
Murry.	Sanguin.	Sardonyx.	Dragon's Tail	♂

The two last tinctures, viz. Tenne and Sanguin, are counted Stainant, or stains rather than colours, and therefore are rarely or never used for the fields of coat-armour, but with abatements, to express some disgrace or blemish in the bearer.

How represented in print.

These colours are represented on copper-plate prints by points and hatches variously posited, as follows. (1.) The metal Or is known by small pricks or points over all the field or charge. (2.) The metal Argent, by the natural whiteness of the paper, without any strokes or points. (3.) Azure, by hatches or strokes across the shield from side to side. (4.) Gules, by lines from top to bottom. (5.) Sable, by hatches crossing each other. (6.) Vert, by hatches from Dexter Chief to Sinister Base. (7.) Purpure, by hatches from Sinister Chief to Dexter Base. (8.) Tenne, by cross hatches from right to left, and from left to right. (9.) Sanguin, by hatches from right to left, and others from side to side.

Metal and colour always go together.

In the composition of arms, Metal and Colour always go together, to represent them at the greater distance. For metal must never be placed upon metal, nor colour upon colour, by the rules of Heraldry. Thus if the field be Azure, the immediate Charge must be either Metal or Fur. For example, — The field is Azure, fretty Argent, on a fess Gules, three leopards faces Or. — So that here is first-Colour, (azure) then Metal, (argent) and then Colour, (gules) and again Metal, (or.) In all coats of arms there must be two tinctures at least; and no coat is accounted good that has not one of the metals.

The

The shield thus covered with some or other of these Of Charges. metals, colours or furs, there is then (rarely otherwise) some charges laid upon it, which are of two sorts, viz. proper and common. Proper charges are those which more peculiarly belong to this art, and these are called Ordinaries, of which there are nineteen in number. Of these nine are called

Honourable Ordinaries; which are as follow.

The nine honourable Ordinaries.

1. The CROSS	} Whose Content is	5. Part of the shield un-
2. The CHIEF		charged, the 3d part.
3. The PALE		3. Part, horizontally on
4. The BEND		the top.
5. The FESS		3. Part, perpendicularly in
6. The INESCUTCHEON		the middle.
7. The CHEVRON		5. Part charged, from Dex.
8. The SALTIER		Chief to Sin. Base.
9. The BAR		3. Part, horizontally across
		the middle.
		5. Part in the middle, a
		little shield.
		5. Part, an angle on the
		Dex. and Sin. Base.
		5. Part charged, like St.
		Andrew's cross.
		5. Part, placed like a Fess.

The ten less honourable Ordinaries are, (1.) The Gyron, formed singly by two lines drawn from the sides to the Fess point of the shield; but they are borne generally many together, as six, eight, &c. (2.) The Orle; it consists of a border only, like that of an escutcheon, the inner part, or area, being void. (3.) The Pile; it is broad at top, like the Pale, and ends in a point or angle at bottom. (4.) Quarter Dexter, and (5.) Quarter Sinister; they contain a fourth part of the field, at the right or left side at top, as the name imports. (6.) Canton Dexter, and (7.) Canton Sinister; these differ in nothing from the quarter, but in being less and peculiar to the gentry, whereas the quarter is proper to nobles only. (8.) The Flanch, (9.) The Flaque, and (10.) The Voider; these three are segments of circles, from the top to the bottom of the shield, on each side one; for they are

The signification of the nine honourable Ordinaries.

always borne by pairs. The Flanch is biggest, the Flafque next, and the Volder least of all.

These honourable charges are all of them of important and distinct signification, as follows. (1.) The Cross signifies afflictions for the cause of religion, and was antiently used by Christians for ensigns in the holy wars, &c. (2.) The Chief denotes the first bearer was a person in authority, or place of command, when he received his coat by his desert. (3.) The Pale imports him skilled in mining, and such like profitable arts. (4.) The Bend shews him to have been valiant in war, and one who mounted on the enemy's walls. (5.) The Fess denotes him a worthy general or leader of an army. (6.) The Inescutcheon shews him to be one who won his enemy's arms. (7.) The Chevron declares him to have been the promoter and top of his family, the projector and finisher of some great work, and the shelter, &c. of his family. (8.) The Saltier implies he behaved honourably at some siege, and did some valiant exploits against the Picts and Scots. (9.) The Bar shews him to have been serviceable in raising batteries or fortifications, to the detriment of the enemy, and security of his prince's army.

Of the others also.

The other less honourable ordinaries have also their proper significations. Thus (1.) The Gyron is a note of unity and reconciliation. (2.) The Orle shews the first bearer so valiant, as to fight till his shield was hewn through. (3.) The Pile shews him to have been excellent in fortifications, and rich in buildings. (4.) The Quarter and Canton shew the first bearer to receive an augmentation from the king, for some eminent service done; or that he won his enemy's shield. (5.) The Flanch and Flafque both shew him to have been true and trusty to his prince in the service he was employed in by him. And (6.) The Volder is the proper reward for a woman for the like services done.

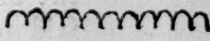
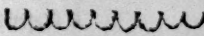


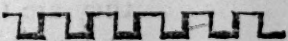

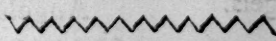
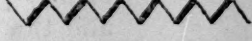

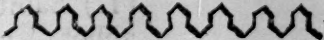
The subdivision of Ordinaries.

Many of the principal ordinaries have a subdivision into some lesser parts, which are the diminutive of that denomination. Thus the Bend hath derived from it the Bendlet, containing half the breadth of the Bend; the Garter half the breadth of the Bendlet; the Cost half the Garter; and the Ribband half the breadth of the Cost. The Bend Sinister hath the Scarp or Scarf half

half its breadth ; and a Batón, or Truncheon, a fourth part of its breadth. The Chief hath its Fillet a fourth part of its breadth. The Pale gives derivation to the Pallet half its breadth ; and the Endorse a fourth part. The Chevron hath the Chevronel half its breadth ; and the Couple Close a fourth part. From the Bar is derived the Closet half the breadth ; and the Barrulet a fourth part. Note, An Endorse, Couple Close, and Barrulet, are not borne in coat-armour singly, but by pairs always with their principal between them.

The lines which compose or bound these charges have divers remarkable forms, which are esteemed as additional notes of distinction ; and are as follow.

Of the form of the lines bounding the charges.

- | | |
|---|--|
| 1. Invested, the points going into the charge |  |
| 2. Ingrailed, the points going into the field |  |
| 3. Waved or Undee |  |
| 4. Nebulee |  |
| 5. Crenelle or Imbattelled |  |
| 6. Raguled or Ragulee |  |
| 7. Indented |  |
| 8. Dauncette |  |
| 9. Patee or Inclave |  |
| 10. Champaine |  |

In Blazon, if the out-lines of the charge be plain or straight, then the charge is barely named, and no mention made of its lines ; but if the lines which constitute the charge, be of any of the foregoing forms, they are always mentioned in blazoning ; as, — He bears azure, a Chief invested, — a Pale ingrailed, — a Fefs indented, &c.

The field of the escutcheon is generally divided into two or more equal parts by lines variously posited across the same, which partition must be first mentioned in blazoning, according to the place of the ordinary which the said line or lines possess. Thus if a line perpendicular to the horizon divide the shield equally, it is said to be parted per Pale ; if the line be parallel

Of the partition of the Field.

to the horizon, it is parted per Fess; if from right to left, it is parted per Bend; and so of any other.

If the Field be divided into several equal parts alternately, of Metal and Colour, or Fur, then it is said to be Pally, or Pale-ways, Bendy, or Bend-ways, Barry, or Bar-ways, &c. according as the parallel lines were in a position agreeable to that of the Pale, Bend, Bar, &c. Moreover, the Field is divided into several equal parts by two of those ways at once, as by parallel lines from top to bottom, and right to left interchangeably; and then it is blazoned Pally-Bendy of six, eight, &c. pieces; and thus otherways you have Barruly-Bendy, Barry-Piley, &c. Also when figures are placed in the part of direction assigned to any of the ordinaries, as the Pale, Bend, &c. they are then said to be borne in Pale, Bend, &c. Thus much for Proper Charges.

Of Common Charges.

Common Charges are all those figures which (besides the proper Charges mentioned) are painted in coat-armour, or within the field of the escutcheon; they are taken from every tribe of beings, both natural and artificial. Concerning these a few things must suffice here.

Angels.

Angels, cherubims, &c. of the heavenly inhabitants, or any part of them, denote great celerity in business, and the messengers of peace and happy news.

Men.

Men are honourable ensigns in coat-armour, as (1.) Saints borne shew the first bearer was some bishop, abbot, &c. who built or ruled some place dedicated to such a saint. (2.) Heads shew him to have done service against those people whose heads are represented, as the Saracens, Turks, Moors, &c. (3.) Hands or arms signify strength and fortitude in the bearer. (4.) Eyes denote his excellent judgment and apprehension. (5.) Legs and feet shew him to have been swift to pursue his enemies, and are emblems of support and assistance; as, (6.) The heart is of knowledge and understanding.

Beasts.

Of Beasts, (1.) Those of prey are more honourable than beasts of chase. (2.) The male is more honourable than the female. (3.) They which are gilt are less honourable than such as are not. (4.) The whole is nobler than any of the parts. (5.) The natural or proper

proper colour of the beast is better than any other.

(6.) The free and regular posture than the irregular and constrained; as chained, muzzled, and the like.

(7.) Of the parts of beasts, the heads are most honourable, and shew the first bearer to have been the head of an army, and to have taken or destroyed some general of the enemy.

(8.) Next beasts of prey are the unicorn, horse, bull, ram, goat, hart, &c. all whose heads are severally more honourable one than the other, as they are named.

(9.) Next the head are the legs, paws, and then the tails of lions.

(10.) No monsters, as griffins, wiverns, &c. are so honourable as real and natural creatures.

(11.) The postures of beasts of prey are of great account in heraldry, and have particular names, as Couchant, lying down; Passant, walking; Combatant, fighting; Rampant, reared on his right legs to fight; Saliant, leaping at; Guardant, looking towards you; Regardant, looking back or behind him; Dormant, sleeping; Seiant, sitting with the fore-feet strait before them; Endorsed, two in a rampant posture with their backs towards each other; with many other terms of less note: all which are significant and emblematical.

Of Birds borne in arms, (1.) The female is more Birds. honourable than the male, except the cock.

(2.) Their native colours are better than artificial.

(3.) Birds of prey, as eagles, falcons, &c. are most honourable.

(4.) Birds of prey and flight are better Volant, or flying, than Close.

(5.) Poultry and all water-fowl are best Close; also the Martlet: in other things they agree with beasts.

(6.) The heads of birds come next the whole in honour; then the feet or talons of birds of prey; after them the legs, the wings, and last of all the feathers.

Of Fishes, (1.) The dolphin is the principal, and Fishes. and is best in heraldry when embowed.

(2.) The most honourable bearing of fish is Nayant, or swimming;

the next Springing; and then Hauriant, or in an exact posture.

(3.) The parts of fishes are seldom borne, except the head and shells.

Insects are very rarely borne in parts. Among them Insects.

the ant denotes industry and a provident mind; the bee, a laborious and beneficent person, with generous

courage

courage and passion; the serpent shews the first bearer to have been a close, subtile, and formidable person; and so of others.

Celestial Bodies.

Among the Celestial Bodies, (1.) The Sun is the chief, and is an emblem of glory, splendor, and innate worth in the first bearer. (2.) The Moon shews a disposition to do good by a virtue or power derived from some more eminent person, and is augmented or abated according to the different phases of the moon: for, (3.) The Crescent, i. e. the moon increasing, shews a younger family, who, in all probability, may rise to greater glory. (4.) The Full Moon denotes the height of glory in a family: and, (5.) The Decrescent, or waning moon, the declension of a family. (6.) The Planets shew power and influence of persons in higher spheres over their inferiors. (7.) The Stars are a note of eminency, and given for some great knowledge in the arts and sciences. (8.) Clouds shew honour and eminency, but withal uncertainty.

Vegetables.

Of Vegetables, (1.) Timber-trees are preferred before others, and among them the Oak is the first in esteem. (2.) Of Flowers, the Rose is first, the Thistle next, then the Fleur-de-lis, and lastly, the Lilly. (3.) Plants cultivated are better or more honourable than those which grow wild. (4.) Of the Parts, the Branches are first in armorial honour, the Fruit next, then the Leaves; after them the Stumps and Roots; the last of all the Trunks. These all bear part of the same signification with the tree to which they belong.

Artificial Things.

Of Artificial Things there are so many, and such variety of this sort of bearing, that only large treatises of Heraldry can be consulted on this head for information, since there are scarce any parts or effects of arts and sciences, but what are made use of for arms or ensigns of coat-armour: and therefore I shall only farther observe, concerning all common charges in general, that they are significative of such qualities and virtues in the first bearers, as are most peculiar and remarkable in themselves in the vulgar account, as is pretty plain from the few examples above-mentioned.







Of the distinction of houses.

To the intent that coat-armour might descend to posterity with safety, and free from strife, distinctions were

were invented: and as in Britain there has been a threefold difference of relation observed, viz. that of Chiefs, Consanguinity, and Strangers, so their differences of armorial bearings are of three kinds, viz.

The Chiefs or Heads of families or houses bear two sorts of charges for their difference or distinction. (1.) A Label of three points, or File of three Labels, which is sometimes plain, and sometimes charged. (2.) Borders; which are either plain, compound, indented, ingrailed, invected, quartered, charged, &c.

For Consanguinity, or kinsmen, the differences are according to the branch of a family from whom they originally descended. For the first family.

Thus the	{	First Son	{	A Label with three Points—	
		Second Son		A Crescent—	
		Third Son		A Mullet —	
		Fourth Son		A Martlet —	
		Fifth Son		An Annulet —	
		Sixth Son		A Fleur-de-lis—	

Now since these are the bearings of distinction for persons of the first house, those of the second house, which is the family of the second son, will have their distinctions as follow:

The	{	Eldest Son	{	A Label	{	upon it.
		Second Son		A Crescent		
		Third Son		A Mullet		
		Fourth Son		A Martlet		
		Fifth Son		An Annulet		
		Sixth Son		A Fleur-de-lis		

In like manner the sons of the third house bear those differences respectfully on a Mullet, the fourth house on a Martlet, the fifth house on an Annulet; and the sons

sons of the sixth house bear them on a Fleur-de-lis; And though there be differences for every son, yet there are none for daughters, for they are all deemed equal in point of honour.

For Strangers. Strangers bear for differences bends, fesses, barrulets, chevrons, pales, quarters, &c. and with these they bear their arms lawfully, and without injury to any.

What we have hitherto said relates to bearing arms in an honourable way, or for honour and renown; but there is another kind of bearing coat-armour, which tends to lessen and abate the honour and reputation of the bearers; and these are therefore called

**Of Abate-
ments.**

Abatements of honour, or badges of disgrace; and are such accidental marks or notes annexed to coat-armour, which imply some ungentleman-like, dishonourable, or disloyal demeanor, quality, or stain in the bearer, whereby the dignity of the coat-armour is greatly abated; and are what we vulgarly call a blot in their escutcheon.

**Nine several
sorts.**

Of these abatements armourists reckon nine, which are evermore of some one of the stainant colours, viz. Tenne or Sanguin, and always uncharged. (1.) The first is a Delf (or square turf) placed in the middle of the field, else it is not a blot: it is given to one that revoketh his challenge, as if dirt were thrown in his face. (2.) An Inescutcheon reversed in the middle of the field: it is given to him that discourteously intreats a maid or widow against her will, and to him that flies from his arms in war. (3.) A Point parted Dexter, i. e. when the upper right corner of the shield is parted from the whole, is given to him who boasteth too much of his martial acts. (4.) A Point in Point, consisting of two arched lines which bend towards the base, and unite in the honour point: it is a badge of disgrace given to a coward. (5.) A Point Champaine; it is formed of an arched line cutting off the base part of the shield, and is due to him who killeth his prisoner in cold blood. (6.) A Plain Point; it is by a strait line cutting off the bottom of the shield, as before, and is due to him who flatters his sovereign with lies, &c. (7.) A Gore; it is formed on the side of the shield by two arched lines, one from the Sinister Chief, the other from the Base Point, and unite in the Fess Point in an acute

acute angle; it is proper for a cowardly and effeminate man. (8.) A Gusset; it is made by a line drawn from the Sinister Chief assant into the field a little way, and then carried perpendicularly to the bottom. It is given to one who loves Venus better than Mars, on the right side; and on the left it is the badge of a devotee to Bacchus. (9.) The last and worst of all is the whole coat reversed, or turned upside down, and is proper to traitors. This coat must not be blazoned in Tinctures, Metals, or Furs, but in the common names of colours, as yellow, red, &c. not Or, Argent, Azure, &c. Note, If any of the descendants of the person thus disgraced shall approve himself a man of virtue and honour, he shall have the abatement taken away, and his coat rendered honourable as formerly.

Marshalling is the second part of Heraldry, and Of Marshall-
consists in an orderly ranging and bestowing of things, ing.

(1.) Within the Escutcheon; as coats of different families marshalled on account of Descent, Marriage, Alliance, Adoption, Gifts of the Sovereign, &c. which is also called quartering coats of arms. (2.) Without the Escutcheon; these are by way of ornament, as the Helmet, the Mantle, Crest, Supporters, Escrol, and Motto: which marshalled all together compleat coat-armour in the highest degree, which is then called Atchievement.

The Quartering of coat-armour, then, is a proper Wherein it
disposition of the coats of distinct families together doth consist.
within one Escutcheon: as on account of marriage, when the coats of man and wife are conjoined together paleways, which is called Impalling, Baron and Feme. Also after issue received the Baron doth bear the arms of the Feme (she being an inheritrix) in an Inescutcheon. Also the heir may bear his mother's coat quartered with his own. Again by Adoption an augmentation of honour and arms is often acquired, which arms the adopted marshals with his own in his own coat. Also by the gift or munificence of the sovereign a person often has his coat augmented with new ensigns of honour.

As to the exterior ornaments of an atchievement, Of the Helmet
they are, (1.) The Helmet, which is an head-piece, or armour for the head; which for sovereigns, nobles, knights,

Mantle.

Crest or Cognizance.

Supporters or Cotises.

Escrol or Compartment.
Motto.

knights, and gentlemen, are of as many different fashions. (2.) The Mantle, which was a military habit used in antient times by great commanders in the field to cover their helmets withal, whence they came to be cut and flashed after various manners, the flutterings and curlings of which by the wind are represented by the jagged scantlings of the mantle about the helmet in the atchievement. (3.) The Crest or Cognizance; this is placed on the most eminent part of the helmet, and consists of a crown, wreath, chapeau, or cap of state, according to the degree of the bearer, surmounted of some honourable figure, which is generally of the animal tribe. (4.) Supporters or Cotises, which are those figures on the sides of the atchievement; which if they are animals, and touch the escutcheon, they are called Supporters; if otherwise, they are called Cotises. The nobility only are permitted to have their arms supported. (5.) The Escrol or Compartment, on which the supporters stand, and which contains (6.) The Motto or Device, which is some word or sentence contrived by the bearer, of some peculiar and important signification; as, *Sola nobilitat Virtus*, Virtue only ennobles us; *Honos Virtutis Præmium*, Honour is the reward of virtue.

In Funeral Solemnities coat-armour is of very conspicuous use; for by the funeral atchievement we know the degree or quality of the person deceased, as whether he was a private gentleman, esquire, knight, baronet, nobleman, prince, king, or emperor; and whether he was a married man, batchelor, or widower; with the like of all degrees of women: and these atchievements are generally fixed on the front of the house of the deceased, and are there called

Of Hatchments, or Funeral Atchievements.

Hatchments, concerning which the following things are observable. (1.) When a batchelor dies, his arms may be depicted single or quartered, but never impaled; and on the hatchment he may bear a crest, but not on the hearse or horses; and the ground without the escutcheon shall be all black. (2.) If a maid dies, her arms must be placed in a Lozenge or Rhombus, single or quartered, with the ground all black; and the hatchment shall have a shell over it instead of a crest; but on the hearse it shall be ensigned with a knot of ribbands.

(3.) When

(3.) When a married man dies, his wife's arms are impaled with his own, with the ground black on his side of the hatchment, and white on his wife's side, which thus distinguishes the dead from the living. On the hatchment he wears a crest, but not on the hearse or horses. (4.) When the wife dies, the arms are as before, with the ground on her side black, but on her husband's white: instead of a crest, her hatchment shall have a shell over it, which must also be omitted on the hearse. (5.) If a widower dies, his arms shall be impaled with those of his wife with a crest, &c. and the ground all black. But (6.) If it be a widow that is dead, her arms with her husband's are impaled within a lozenge shield, with a shell over it instead of a crest, and the ground all black. (7.) When the deceased is the last of a family, then, instead of a crest or shell, there shall be placed on the hatchment a death's head, denoting that death has conquered all. Note, By the Helmet and Coronet, &c. the degree of the deceased is known. Those little shields, which contain death's heads and other funeral devices placed on the foreheads of horses that draw the hearses at pompous funerals, are called Chaperonnes, Shapournets, or Chaperoons.

Thus much for a description of Arms and Achievements; next follow the Rules of Blazon; which are carefully to be observed; viz. (1.) First the Tincture of the Field must be named; as, he bears Or, Argent, Azure, Gules, &c. (2.) Then the Lines wherewith it is divided, and also their forms; as per Pale, Fess, Bend, &c. inverted, ingrailed, indented, &c. (3.) Next the Charge must be named; of different things, that which lieth next the field, and nearest the center, first; and then those which are more remote. (4.) When colour and metal are placed several times one upon another, the proper names thereof must be mentioned but once; as, he bears Or, on a saltire Azure, nine lozenges of the First, i. e. the first named metal Or, which must not be again repeated: for, (5.) A repetition of words is accounted a great fault in blazoning; and all superfluous words must be carefully avoided, especially any of these, of, or, and, with, and such like, the repetition of which is insufferable to the ear of an armourist. (6.) A propriety of language,

The Rules of
Blazon.

or

or proper forms of blazon, must be heedfully observed; for different forms make the arms cease to be the same. (7.) The more compendious the blazon is, the better, provided it be not mysterious. (8.) These rules and cautions relate to the arms on the shield only, and not to the exterior ornaments of the achievements; for they are no essential parts of arms, and therefore in blazoning them, repetitions, &c. are not deemed faults.

An example
of Blazon.

I shall add one example of blazoning coat-armour, and that shall be of the arms of his present Majesty King GEORGE, as being that which the reader may most easily come at, to observe with the blazon, and contain a great variety in several coats marshalled together.

A R M S.

Quarterly, in the first grand quarter Mars, three lions passant-guardant in pale, Sol; the imperial ensigns of England, impaled with the royal arms of Scotland, which are Sol, a lion rampant within a double tressure flowered and counterflowered with fleurs-de-lis, Mars. The second quarter is the royal arms of France, viz. Jupiter, three fleurs-de-lis, Sol. The third, the ensign of Ireland, which is, Jupiter, an harp, Sol, stringed Luna. And in the fourth is his Majesty's own coat, viz. Mars, two lions passant-guardant, Sol, for Brunswick; impaled with Lunenburg, which is, Sol, semee of hearts proper, a lion rampant, Jupiter; having ancient Saxony, viz. Mars, an horse courant, Luna, ente (or grafted) in base; and in a shield furtout, Mars, the diadem or crown of Charlemagne. The whole within a Garter, as sovereign of that most noble order of knighthood.

C R E S T.

An helmet full-faced and grated, mantled with cloth of gold, doubled ermine, and surmounted of an imperial crown, on the top of which is a lion passant-guardant, Sol, crowned with a like crown.

S U P.

S U P P O R T E R S.

On the dexter side a lion guardant, Sol, crowned as the crest; on the sinister, an unicorn, Luna; horned, mained, and hoofed, Sol; gorged with a collar of crosses pattee, and fleurs-de-lis, a chain thereto affixed all gold; both standing on a compartment, from whence issue at the right end a Rose party per pale, argent and gules, stalked and leaved, vert, for England; and on the left a Thistle proper for Scotland.

M O T T O.

DIEU ET MON DROIT; that is, God and my Right.
In the Garter, HONI SOIT QUI MAL Y PENSE; i. e.
Let him be ashamed who thinks ill thereof.

Thus much for the Art of Blazon; and now a word or two concerning the professors thereof, viz. Heralds, &c. shall conclude this head.

The College of Heralds is seated on St. Bennet's Hill, near Doctors Commons. They were made a college or corporation by charter of king Richard III. and afterwards had another charter of privileges granted to them by king Edward VI. in the third year of his reign, 1549. Of the College of Heralds.

Of this collegiate society are, (1.) The Earl Marshal of England, who is their head; of whom we have already spoken. (2.) Four Kings of Arms. (3.) Eight Heralds; and (4.) Four Pursuivants at Arms.

The Kings of Arms are, (1.) Garter, principal king of arms, instituted by Henry V. 1422. His office is to attend the knights of the garter at their solemnities, and to marshal the funeral solemnities of the higher nobility; to carry garters to kings and princes beyond the seas, &c. (2.) Clarencieux, so called from the duke of Clarence, to whom it first belonged. His office is to marshal and dispose of the funerals of all the lower nobility and gentry on the south side of the Trent, and is therefore sometimes called Surroy or South-Roy, i. e. South King. (3.) Norroy, or North-Roy, is to do the like on all the
K k Of the Kings of Arms.
north

north side of the Trent. (4.) Bath, instituted by his majesty in 1725, upon the creation of the thirty-eight knights of the Bath, in the person of Grey Longueville, Esq; His office is to attend those knights at their creations, installations, &c. At the same time he was also made Hanover Herald.

Of the Heralds.

The Heralds are distinguished by the names of Richmond, Lancaster, Chester, Windsor, Somerset, York, Hanover, and Brunswick; besides one extraordinary, called Mowbray. They are all of equal degree. Their office is to wait at court, attend public solemnities, proclaim war and peace, &c.

Of the Pursuivants.

Pursuivants, or Marshals, are four, viz. Rouge-Crofs, Rouge-Dragon, Portcullis, and Blue-Mantle. Besides these, there are two extraordinary, called Blanch-Lion and Rouge-Rose. They had their names, it is thought, from such badges heretofore worn by them. The service of these, the heralds, and of the whole college, is used in marshalling and ordering coronations, installations, marriages, christenings, funerals, festivals of kings, cavalcades, shews, &c. and also to take care of the coats of arms, and of the genealogies of the nobility and gentry.

Note, That as Garter is principal king of arms in England, so Lion is in Scotland, and Ulster in Ireland.



PHILOLOGICO-MATHEMATICAL
M I S C E L L A N I E S.

THE bulk of this work consisting purely of Mathematical Philological Literature, it could not well be expected that subjects of any other sort, especially mathematical ones, should make any part thereof; but since at this time no parts of learning are found more useful, or cultivated more universally, or afford greater pleasure in the study thereof, than the Mathematical Arts and Disciplines, I thought it would be no unacceptable service, even to the mere philological reader, to give some general account of them in a descriptive manner only; and that may, in some measure, be esteemed of a philological nature, and therefore comportant enough with my design.

Mathesis, though it originally signifies learning in general, yet with us, in our own tongue, it is appropriated to mathematical literature, and comprehends in its signification all the arts and sciences which are conversant about number, magnitude, measure, motion, &c. They are therefore called mathematical, and those who understand or profess them are called mathematicians.

Mathematics, or the mathematical sciences, have by many been divided into (1.) Pure Mathematics, containing Arithmetic and Geometry, which treat only of number and magnitude, and their various habitudes and relations abstractedly considered from all kind of matter. (2.) Mixed Mathematics, which are those branches of the science which treat of the properties of quantity, either of number or magnitude, applied to matter; as astronomy, geography, &c. (3.) Speculative Mathematics, which contemplates the properties, proportions, relations, &c. of bodies, which make the theory. And, (4.) Practical Mathematics, which is the application of the theory to the practical uses of life in all the several sciences.

Mathematical literature, why here described.

Mathesis, what.

The division of mathematical arts and sciences.

Another division thereof.

But this is far from being a simple, just and logical division of the body of mathematical science; I shall therefore, with regard to the particular and different nature of the parts, make another fourfold division thereof under the general heads following: (1.) Arithmetic. (2.) Geometry. (3.) Mixed Mathematics. And, (4.) Mechanics. Of all which, and their various subdivisions, a little.

ARITHMETIC.

Of arithmetic.

Arithmetic is the doctrine of computation in general, or the art of estimating quantities of number or magnitude, and expressing them in characters of a known and determinate value or signification: the fundamental rules of doing which are (after learning the value of the characters, which is called numeration) five, viz.

Its rules.

(1.) Addition, by which various and different numbers of things are collected into one sum, which is called the total, or amount of all. (2.) Subtraction, by which one number or quantity is taken from another, in order to know the remainder, difference, or excess of the greater above the lesser. (3.) Multiplication, by which one number, called the multiplicand, is increased or multiplied by another, called the multiplier, so many times as is expressed thereby; the result of which is called the product. (4.) Division, by which one number, called the divisor, may be subtracted from another, called the dividend, so many times as it is contained therein, which is expressed by a third number called the quotient. (5.) Evolution, or the extraction of roots out of any power, as the square, the cube, the biquadrate, the sursolid, &c. which are produced by multiplying any number, called the root, into itself 1, 2, 3, 4, 5, &c. times respectively.

The several kinds thereof.

The art of computation consists of the following branches, viz. (1.) Numerical Arithmetic, or that which performs by numbers. (2.) Logarithmetical Arithmetic, or that which computes by logarithms or the ratio's of numbers. (3.) Specious Arithmetic, or Algebra, which useth symbols or characters instead of numbers. And (4.) Fluxionary, which proceeds with the

the momentary increments and decrements of quantity considered in a flowing state.

Numerical computation makes use of nine characters, called figures or digits, to express numbers by, viz. 1, 2, 3, 4, 5, 6, 7, 8, 9, and the cypher 0; and it is of two kinds, viz. (1.) Vulgar or Common Arithmetic, which expresseth the value of money, weights, measures, and fractional parts in divers denominations, according to the usage of the country. (2.) Decimal Arithmetic; this expresseth the value of divers inferior divisions or parts of money, weight, measure, time, in tenth, hundredth, thousandth, &c. parts of the whole number or integer; that is, the integer is supposed to be divided into 10, 100, 1000, 10000, &c. equal parts; then the inferior denominations or parts of this integer are expressed in those equal parts, which, because their value decreaseth in a tenfold proportion in each place to the right-hand of the integer, are called decimal parts or numbers. For instance, in vulgar arithmetic, 12l. 15s. 8½d. will be thus expressed in decimals, 12,7854, which are to be worked in all respects like whole numbers; which therefore renders decimal arithmetic compendious, easy, and every way preferable to the vulgar.

Numerical or vulgar,

and Decimal arithmetic.

Logarithms are numbers in arithmetical progression, which, set with others in a geometrical progression, do express their ratio's or proportions to one another, as in the two following series, viz.

Of Logarithms

Thus {	Logarithms,	0.	1.	2.	3.	4.	5.	6.	Arith. Prog.
	Numbers,	1.	2.	4.	8.	16.	32.	64.	Geom. Prog.

Now the ratio or number by which the members of the geometrical progression are produced by a constant multiplication therewith, is 2; thus 8 is produced by 3 multiplications, 16 by 4, 32 by 5, &c. And therefore the ratio of 8 to 1 (the first term) is 3, of 16 to 1 is 4, of 32 to 1 is 5, &c. All which ratio's are expressed by the numbers 3, 4, 5, in the series above; for which reason they are called their logarithms. Now the peculiar and most useful property of logarithms is this, that for every addition and subtraction of them, there corresponds a multiplication and division

of the number to which they belong; thus by adding 2 and 4 you have 6, which is the logarithm of 64, the product of 4 times 16; and the contrary for division. Also by dividing a logarithm you extract the root of its number; so 6 divided by 2 quotes 3 the logarithm of 8, which is the square root of 64; divide 6 by 3 it quotes 2, the logarithm of 4, the cube root of 64; and so of others. Having therefore a table or canon of logarithms for all large numbers, the tedious labour of multiplication, division, and extraction of roots, is saved by an easy addition, subtraction, and division of their logarithms; which is the great excellency of this kind of arithmetic, and which no artist ought to be unacquainted with.

Of Algebra.

Algebra is called Specious Arithmetic, because it is a peculiar art or method of managing a calculus or computation by species or symbols (which are generally letters) instead of figures, or the digits used in common arithmetic. The peculiar artifice of this invention is to assume quantities really unknown as really known, and then to proceed with them according to the rules till they are brought to an equation or equality with others given or known at first. It is usual to represent known quantities by the first letters of the alphabet, as a, b, c, d , &c. and the unknown ones by the last, as x, y, z ; or by vowels, as i, o, u . Moreover, to avoid all unnecessary use or repetition of words, algebraists have a set of characters which signify how the several quantities are affected in the operation; the chief whereof are the following.

Algebraic SIGNS, with their Explanations.

- + More; as $a+b$, is a more b .
- − Less; as $a-b$, is a less b .
- × Multiplied; as $a \times b$, is a multiplied by b .
- ÷ Divided; as $a \div b$, is a divided by b .
- = Equal to; as $a=b$, is a equal to b .
- : Is to; } as thus, $a:b::c:d$; that is, as a is to b ,
- :: So is; } so is c to d .
- ⊙ Involved; as squared, cubed, &c.
- √ Evolved; or the root extracted.
- ✓ The Root; as \sqrt{ab} , is the square root of ab .

Fluxions

Fluxions are the different velocities or moving forces Of Fluxions.
 wherewith any quantities, considered as fluents, or in
 a flowing state, increase or decrease every moment
 according to the ratio or proportion of those velocities.
 Quantities and their fluxions are here (as in algebra)
 represented by species or letters; those called constant
 quantities, by the first letters a, b, c, d , &c. and the
 fluents, or flowing ones, by the last, as v, x, y, z ;
 and their fluxions by the same with a point over them
 thus, $\dot{v}, \dot{x}, \dot{y}, \dot{z}$. But since the ratio's of velocities
 do themselves, in many cases, keep perpetually altering
 (as in the motion of a falling body, &c.) it will happen
 that these fluxions themselves must vary every moment,
 and so produce fluxions of fluxions, or second fluxions,
 thus marked, $\ddot{v}, \ddot{x}, \ddot{y}, \ddot{z}$; and the fluxions of these

.....

are third fluxions, as $\dot{\ddot{v}}, \dot{\ddot{x}}, \dot{\ddot{y}}, \dot{\ddot{z}}$; and so on *ad infinitum*.
 Now the calculus of fluxions consists of two methods,
 viz. the direct method, which finds the fluxions of
 fluent quantities proposed; and the inverse method,
 whereby from the fluxions given we investigate the
 flowing quantities. This art is of modern date, is the
 very apex of human learning, and the invention of the
 immortal Sir Isaac Newton.

G E O M E T R Y.

Geometry is that part of Matheſis which contem- Of Geometry:
 plates the nature, properties, and various affections of
 quantities or magnitude in general. Quantity is of
 various ſorts; (Note, A point is that which is ſuppoſed
 to have no dimenſions.) (1.) A line, which is gene- A line.
 rated by the motion of a point; and therefore is of one
 dimenſion only, viz. length. (2.) A ſuperficies, which Superficies.
 is generated by the motion of a line, and ſo hath two
 dimenſions, viz. length and breadth. (3.) A ſolid, A ſolid.
 which is produced by the motion of a ſuperficies, and
 hath three dimenſions, viz. length, breadth, and depth.

Every quantity is meaſured by a quantity of the ſame Quantities,
 kind; as (1.) A line is the meaſure of a line; and this how meaſur'd.
 is ſimple meaſure. (2.) A ſuperficies is meaſured by a
 ſuperficies of leſs quantity, and this is called ſquare
meaſure.

- measure. (3.) A solid measureth a solid, and this is called cubic measure.
- Similar.** Quantities are said to be similar, which are generated in the same manner; thus all right lines and circles, squares and spheres, are similar to each other.
- Equal.** They are also said to be equal, when they can be measured exactly by one common measure. Lastly, they are said
- Commensurable.** to be commensurable, when they can be exactly measured by any finite common measure: but such as have no such common measure are said to be incommensurable to each other.
- Geometry of three kinds.** As lines are those simple quantities of which all others do consist, so, according to the several forms or kinds of these, there must ensue a variety of geometric science. Thus (1.) Right lines produce plain superficies, and solids terminated by such; all which make the subject of plain geometry. (2.) Circular lines, which generate spherical or globular bodies; the science of which makes spherical geometry. (3.) The curves, and superficies terminated by them, which are produced from various sections of a cone, make the subject of the conical geometry. Of which in order.
- Plain geometry.** Plain geometry, then, is that which contemplates and teaches the nature and properties of all quantities or bodies which are generated by a rectilinear motion; and gives rules whereby to investigate and compute the areas of all superficies, and the solidity of all such solids. Among the superficies of plain geometry the chief are, the square, the parallelogram, the triangle, the circle, the rhombus, rhomboides, and all sorts of trapezia and polygons. Among the solids are reckoned the cube, the parallelopipedon, the cone, the globe or sphere, the pyramid, prism, cylinder, and all kinds of frusta and polyhedrons. The doctrine of these figures and bodies makes the subject of Euclid's Elements of Geometry.
- Spherical geometry.** Spherical geometry, or the doctrine of the sphere, is conversant about the nature, properties, and affections of the circles of the sphere, both great and small.
- Doctrine of the sphere.** This consists of three great parts, viz. (1.) The doctrine of the circles of the sphere considered singly, or as intersecting each other, and forming spherical triangles, which make the subject of spherical trigonometry.

metry. (2.) Orthography, which is the projection of Orthography.
the sphere in plano, by parallel lines; or a delineation
of all its circles as they are to an eye at an infinite
distance; which in this case are all ellipses. (3.)
Stereography, a projection of the sphere, or its circles, Stereography.
as they would appear on the plane of the projection to
an eye placed on the surface of the sphere; and in this
case the projection will all consist of right lines and
circles.

Conical geometry, commonly called conic sections, Conical geo-
or conics, is the doctrine of three special curves made metry.
by the section of a cone in three different manners.
As (1.) The ellipsis, which is produced by a plane An ellipsis.
cutting off the cone, through both sides, but not pa-
rallel to the base. This figure is vulgarly called an
oval, or oblong circle; having two diameters, the
longest called the transverse, and the shorter the con-
jugate diameter. (2.) The parabola, which is a curve Parabola.
made by cutting the cone by a plane parallel to one of
its sides. And (3.) The hyperbola, which is pro- Hyperbola.
duced by a plane cutting the cone in any manner not
parallel to the side or base. The properties peculiar to
each of these curves are many, and make the most
important part of the higher geometry.

Mixed MATHEMATICS.

This consists of those mathematical disciplines which Of mixed ma-
require the united assistance of arithmetic and geometry, thematics.
being the application of the theories or rules of each
to the various uses and purposes of life: and are as
follow.

Mensuration is the art of computing the quantity of Mensuration.
the dimensions of bodies of all kinds, in the known
measures in common use, as inches, feet, yards, &c.
Thus we find how many rods, yards, feet and inches,
the length of any line or distance is; then we compute
how many square rods, yards, &c. are contained in the
area of any superficies, which is called the superficial
content thereof. And, lastly, we calculate the number
of cubic feet, inches, &c. contained in the bulk of any
solid, which is called the solidity, or solid content,
thereof.

Gauging

Gauging.

Gauging is an art whereby we find the content of the capacity of any vessel in ale, beer, or wine gallons, or of corn in corn bushels. In order to do this, the solid content is found in cubic inches by plain mensuration; and then reduced to gallons, by dividing by 282, the cubic inches in an ale gallon; or 231, for a wine gallon; or $268\frac{2}{3}$, for a corn gallon; or 2150,42, for corn bushels; and this is done by various methods and instruments.

Geodæsia.

Geodæsia, or surveying, is the art of measuring land; by first measuring the sides of a field by Gunter's chain of 4 rods, or 100 links; and then taking the angles with a plain table, theodolite, &c. Afterwards the field is plotted, or laid on paper, from a scale of equal parts; and then its area is reduced to triangles, trapezia, &c. and the superficial content of each is found in acres, roods, and rods, by allowing 160 square rods or poles to an acre, statute measure.

Trigonometry.

Plain.

Trigonometry; this is the most useful art which teaches the doctrine of the mensuration of triangles, and is twofold; viz. (1.) Plain, which is conversant about plain or rectilineal triangles; the sides or legs of these are considered as the radius's, sines, tangents, or secants of the angles, and are measured in any kind of equal parts; the angles themselves are computed in degrees, minutes, and seconds, the measures proper to a circle, of which they are severally parts. In any plain triangle, two sides only, or on one side and one angle being known, is sufficient to discover the other sides and angles. (2.) Spherical; this treats of spherical triangle, the sides of which are parts of circles, and so both them and their angles are found in degrees, minutes, &c. by means of the radius, sine, and tangent, as before.

Spherical.

Altimetry and longimetry.

Altimetry is the art of measuring the heights of objects above the earth by means of a quadrant, and that either at one or two stations; at one station you form a right-angled triangle, in which the base or distance of the object is measured and known, and the angle at the base is measured likewise by the quadrant, and therefore the cathetus or perpendicular (which is the height of the object) is easily found. If you cannot approach the object, you take the angle of its height at two stations, and

and measuring the distance between them, you have an oblique triangle, wherein are two angles and a side known, and from thence the other parts, and consequently the height of the object is easily determined. The measuring of the distance of objects after the same manner is called longimetry.

Navigation is the art of sailing, or conducting a ship under sail from one place to another, or to any appointed port; this may be done several ways. As, (1.) By the plain chart, wherein the meridians are all laid down as parallel lines, which they are not, and therefore it is very erroneous, and only useful in coast-sailing. (2.) By Mercator's chart; this is a great improvement of the plain chart; for though the meridians are here parallel lines, yet the degrees of latitude being increased in proportion as the degrees of longitude decrease, the true easting or westing of a ship is hereby preserved, which was destroyed in the other. (3.) By middle latitude, which is half the sum of the latitudes departed from and arrived to; for this is the analogy: As the co-sine of middle latitude is to the tangent of the course, so is the difference of latitude to the difference of longitude; and this way comes very near the truth. (4.) Oblique sailing is that wherein the parts to be calculated constitute an oblique triangle, which happens in many cases. (5.) Great circle sailing; this is when the mariner directs the course of the ship upon the arch of a great circle of the globe; the reckoning, therefore, here, is made according to the rules of spherical trigonometry. In all other methods but this the ship is driven by the wind on a rhumb, or line, which makes equal angles with every meridian. (6.) Globular sailing, or by the globular chart; the property of which is, that the parallels and meridians are described thereon in the same manner as they are on the globe itself; and consequently this method is not only very curious, but the most natural of all others; and is also very exact.

Fortification is the art of applying the doctrine of plain trigonometry to the calculation of the lines, sides, and angles of a fort of any figure, regular or irregular, in order to secure and defend the place so fortified against the attacks of the enemy in the best manner possible.

Gunnery,

Gunnery.

Gunnery, in part, consists of the application of the doctrine of projectiles, or casting bombs, that so any distant object, as a castle, &c. may be thereby struck with certainty, to the intent it may be demolished. For from the nature of the parabola, and the doctrine of plain triangles, certain rules are deduced, whereby the degrees of elevation of the cannon, the impetus or force by which the ball or bomb is projected, the amplitude or horizontal range, the height of the random, the time of the continuance in the air, &c. are determined for that purpose.

Music.

Music is the art of making harmony with the various tunes or notes of sound combined in a proper manner. All sounds are raised by the percussion of some body, which vibrating in the air, causes various notes or tunes of the sound, which are more acute or grave, as those vibrations are quicker or slower, and they are reciprocally as the lengths of strings; and hence the relation or proportion of musical notes is determined; thus if a chord be strained, and fretted or stopped

At the Divisions here specified, viz.	$\left\{ \begin{array}{l} \frac{1}{2} \\ \frac{2}{3} \\ \frac{3}{4} \\ \frac{4}{5} \\ \frac{5}{6} \\ \frac{3}{5} \\ \frac{5}{8} \end{array} \right\}$	The Note founded will be	$\left\{ \begin{array}{l} \text{An Octave or Eighth.} \\ \text{A Fifth.} \\ \text{A Fourth.} \\ \text{A greater Third.} \\ \text{A lesser Third.} \\ \text{A greater Sixth.} \\ \text{A lesser Sixth.} \end{array} \right\}$

If any of these notes are founded with the whole string, the consonance is agreeable and pressing to the ear; and they are therefore called concords, but all others are discords. And a proper combination of these notes, both concords and discords, makes harmony or melody.

Astronomy.

Astronomy is that science which, from the conic sections, and trigonometry plain and spherical, supplies us with rules for investigating the diameters and distances of the planets; the figure of their orbs; the laws of their motions; their various phases; the time of their annual, menstrual, or diurnal revolutions; the eclipses of the sun and moon, and the occultation of the planets and stars; their places, latitude, and longitude in the ecliptic; their declination, right and oblique ascension

ascension and descension, and ascensional difference; amplitude, azimuth, and various other affections of the planets and stars.

Sciagraphy, or dialling, is the art of making dials of all sorts, on all kinds of planes; as horizontal, erect, or reclining; direct or declining. The hour-lines, the stile's height above the plane, the substile's distance from the meridian, and plane's difference of longitude, are all calculated by the rules of spherical trigonometry; and from thence are deduced various mechanical methods of making dials for such as understand not the theory. Sciagraphy or dialling.

Optics is a science which treats of the properties of direct vision, and is of two kinds, viz. (1.) Catoptrics, which treats of vision by reflection of the rays of light from the plane, convex, or concave superficies of mirrors or looking-glasses. (2.) Dioptrics, which treats of vision by refraction, or the appearances of objects through different mediums, as air, water, glass; and especially through lenses of glass, which are either convex or concave on one or both sides generally; and receive rays of light, which are either parallel, converging, or diverging; and accordingly enlarge or diminish the images of objects in the focal point of the lenses; which are used sometimes singly, and sometimes combined; as in compound or double microscopes and telescopes. Optics. Catoptrics. Dioptrics.

Perspective is that part of the mathematics which gives rules for delineating objects on a plain superficies after the same manner as they would appear to our sight, if seen through that plane, it being supposed a transparent one. In the representation of solid bodies, buildings, &c. there are three parts observable. (1.) Ichnography, which shews the plan, plat-form, or ground-work of the building. (2.) Orthography, which exhibits the front upright, or parts in direct view. (3.) Scenography, which is the perspective view of the whole building, fronts, sides, the height and all. Perspective.

Architecture is to be reckoned among the arts mathematical, forasmuch as geometry is necessary for forming the several parts and members in a piece of building, and constructing the whole with beauty and harmony. Architecture. Arithmetic

Arithmetic also furnishes the means of calculating the proportions and dimensions of every part. Thus, having divided the diameter of a column or pillar into sixty equal parts, (called a module) the several members of the pedestal and base of the pillar, and of the capital, the architrave, freeze, and cornice of the entablature above, are all determined in those equal parts of the module, according to the various proportions used in the Tuscan, Doric, Ionic, Corinthian, and Composite orders.

M E C H A N I C S.

Of mechanics. Mechanics is the geometrical science of motion and moving forces, or powers; declaring their effects, as applied to engines, and demonstrating the laws by which all motion is performed by simple or compound machines.

The center of magnitude. In bodies, as the subject of motion, we consider three sorts of centers, viz. (1.) The center of magnitude, which is that point in bodies, equally distant (as much as possible) from their extremities. (2.) The

Motion. center of motion, which is that point in bodies about which they may move or rest. (3.) The center of

Gravity. gravity is that point in a body on which it will rest, or on all sides of which the parts of that body equiponderate each other, in any situation whatsoever.

Of the power and momentum of motion. That by which a body may be sustained or moved, is called a power or moving force. The quantity of a power is determined by the quantity of gravity of the body on which it acts, sustaining it in equilibrio, or raising it. The quantity of motion of a body is the sum of the motion of all its parts. The momentum or force of a body is compounded of the single forces of gravity, and the celerity or swiftness of its motion.

Of the mechanical powers. The mechanical powers or machines are either simple or compound. Simple machines are the following, viz. **The lever.** (1.) The lever, which is a strait piece or bar of wood or iron, moveable on a fixed point or center, called the fulcrum or prop; at one end of the lever the power is affixed, and the weight to the other most generally.

The balance. (2.) The balance is a lever suspended in the middle point; at the ends of which hang a pair of scales, for

for estimating the weight of bodies by some known and standard weight. (3.) The axis in peritrochio, or wheel and axis, which is a machine invented for the easy lifting or raising a weight to a greater height than can be done by the lever; as in the crane, &c. (4.) The pulley, which is a machine consisting of a wheel, moveable about an axis fixed in a block; when several are combined in one block, they are called a tackle of pulleys, and are used where the wheel and axis cannot be conveniently applied. (5.) The wedge is an instrument much better known in its effect than in its power. (6.) The screw, whose power and use is well known, especially in point of pressure. (7.) The inclined plane. By this machine bodies are raised with less power in an oblique, than they could be in a perpendicular direction.

Axis in peritrochio.

The pulley.

The wedge.

The screw.

The inclined plane.

The general principle, or canon, by which the force or power of each of those machines is estimated, is this, As the distance of the weight is to the distance of the power from the center of motion, so is the power to the weight it will equiponderate. Otherwise thus: The spaces passed through by the power and weight are reciprocally proportional to their forces.

The general principle of all mechanic agency.

Compound machines are such as consist of two or more of the simple ones combined together, and whose forces are united to produce an effect; as clocks, watches, orreries, most sorts of water-engines, with an infinite variety of others.

Compound machines.



THE

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